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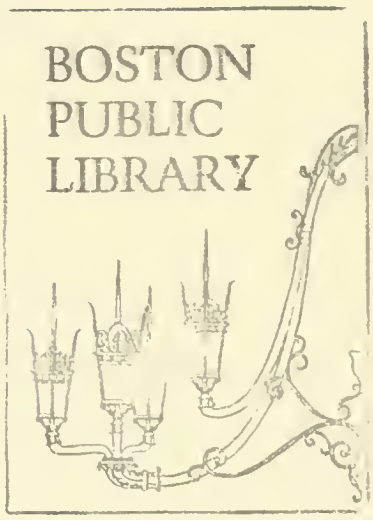

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EVANS HOUSE EVALUATION

174-175 TREMONT STREET

BOSTON, MASSACHUSETTS

Prepared for:

The F. D. Rich Company of Boston
and A. W. Perry
99 Summer Street, #1800
Boston, Massachusetts 02110-1200
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September 27, 1989

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INTRODUCTION AND SUMMARY

Evaluation of the Evans House at 174-175 Tremont Street was undertaken at the request of the Commonwealth Center joint venture partners, F.D. Rich of Boston and A.W. Perry, for the purposes of determining and recording the current condition of the building and exploring the alternatives available for treatment and incorporation into the Commonwealth Center development project.

The following evaluation report is the culmination of many months of archival research, on-site survey, study and discussion. The evaluation provides an objective reporting of the history and significance of the building, the current physical condition, the structural condition and stability, and the requirements for compliance with the code, along with a description of the requirements and impacts of the development alternatives.

The ultimate purpose of this report is to provide sufficient information to allow all interested persons to participate fully in the final decisions for treatment of the Evans House.

The following persons and firms have contributed to the final report:

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HISTORY AND SIGNIFICANCE

William Evans of Roxbury, Massachusetts purchased the land at 175 Tremont Street in 1857 (1), demolished the building on the site, and in 1859 constructed a new, five story brownstone dwelling. Information about its construction and details have been preserved in a number of suits and agreements made by Evans and his neighbors at this time. (2) In 1866, Evans purchased the building at 174 Tremont from the estate of James Hayward for $51,000 and three years later built a similar brownstone on that site. (3)

Prior to Evans' building projects, a line of small, four-story brick dwellings had bordered the Boston Common along Tremont Street. From West to Mason Street, three lots north of 174 Tremont, marched Colonnade Row, nineteen late Federal rowhouses designed by Charles Bulfinch in 1810. The homeowners directly adjacent to 175 Tremont had followed Bulfinch's pattern to the letter: four story, three bay brick facades with fanlight doors and flat arched lintels. (4) Evans, however, chose to boldly break the mold when rebuilding fifty years later, choosing materials and styling in vogue at the time. The structures were clad in brownstone, popular since the 1840's for fashionable facades, and the detailing was "Anglo-Italianate", characterized by a rusticated basement story, four upper stories, and Renaissance detailing. (5)

The bold and fashionable building was suited for more than a single family residence and by 1865, Evans had begun advertising it as the Evans House Hotel. (6) Two years later, a guidebook writer noted that "there are . . . many large buildings where apartments can be had, either with or without accommodations for food; such as the Coolidge House, Pelham House, Evans House, etc." (7) The first modern hotel in America had been the Tremont House, built just north on Tremont Street in 1828-1829, and through the 19th century, a "family hotel" such as the Evans House remained the only "proper" alternative housing for single people or young couples.

The hotel continued to thrive through the end of the 19th century, gaining an advantage through its location in the heart of the theater district. In 1883, <u>King's Handbook</u> described it as

> a handsome structure at No. 175 Tremont Street, facing the Common, and pleasantly situated. The hotel is on the American plan, and is provided with a passenger elevator and all the modern improvements. It accommodates about 150 people. . . A great many actors make the Evans House their home while in Boston. The proprietor is A. L. Howe, who during the year 1878 opened the Hotel Wellesley . . . which has earned such an enviable reputation for its lovely situation and good management. (8)

During the 1880's, the lower floors became occupied by commercial interests. In 1887, it housed the famous Boston Cooking School, founded in 1882; Noble's Classical School for Boys and Young Men; and the Woodward-Brown Pianoforte Company. (9) When Avery Street was widened in 1914, the adjacent building was destroyed and a new north wall was erected. After this time, the occupancy became largely commercial.

174-175 Tremont Street is architecturally significant both as the first structure to break the uniform Federal streetscape created by Colonnade Row and as one of the last remaining 19th century structures on the west border of the Boston Common. It is a rare survivor of Boston's 19th century hotels, one which had an important place in both the theater district and the music district which still surround it. Alterations on the interior, changes from the hotel use to commercial and residential use, replacement of the entire Avery Street facade and multiple changes in the lower two floors have affected the architectural integrity of the structure. The Evans House is a contributing structure to the Piano Row National Register Historic District, and petition for listing by the Boston Landmarks Commission as an individual Landmark is pending.

Footnotes

(1) Registry of Deeds, Suffolk County Courthouse, Lb. 751, Fol. 7.

(2) For instance, a party wall agreement between Evans and James Hayward, owner of 174 Tremont Street (Registry of Deeds, Suffolk County Courthouse, Lib. 766, Fol. 87), and a suit brought against him by the trustees of Henry, Elizabeth and Maria Codman at 176 Tremont forcing Evans to remove a bay window on the south side (Lib. 848, Fol. 58).

(3) Registry of Deeds, Suffolk Co. Courthouse, Lib. 886, Fol. 49 and party wall agreement with the estate of Joseph W. Revere, owner of 173 Tremont, Lib. 971, Fol. 200.

(4) Walter Muir Whitehill, Boston: A Topographical History (Cambridge: Harvard University Press, Belknap Press, 1976), pp. 65-68.

(5) Charles Lockwood, Bricks and Brownstone (New York: McGraw-Hill Book Company, 1972), pp. 146-149.

(6) Boston City Directory, 1865, cited by Boston Landmarks Commission Survey.

(7) David Pulsifer, Guide to Boston and Vicinity, (Boston: A. Williams & Co., 1867), p. 185.

(8) Moses King, King's Handbook of Boston (Cambridge: Moses King at Harvard College, 1883), p. 47.

(9) Dexter Smith, Cyclopedia of Boston and Vicinity (Boston: Cashin and Smith, 1887), pp. 48 and 69.

DESCRIPTION AND CONSTRUCTION HISTORY

The Evans House at 174-175 Tremont Street is bounded on the north by Avery Street, the east and south by an alley, and the principal facade faces west across Tremont Street. The plan is a polygon measuring approximately 60 feet across the facade, 83 feet along Avery Street, 50 feet across the east alley, and two slightly angled walls measuring 85 feet along the south alley.

The building is five stories plus the mansard and basement. Constructed in two phases, 174 Tremont is four bays wide and 175 is three bays. The secondary facade along Avery Street is nine bays deep. The building is masonry bearing wall construction with wood and steel interior framing. The ground and second floor facades at Avery and Tremont streets are cast iron framed storefronts. Floors three through five at Tremont Street are brick faced with brown sandstone. The sixth floor at Tremont Street is clad with a copper mansard. On Avery Street, floors three through six are faced with red brick. All window sash and frames are wood.

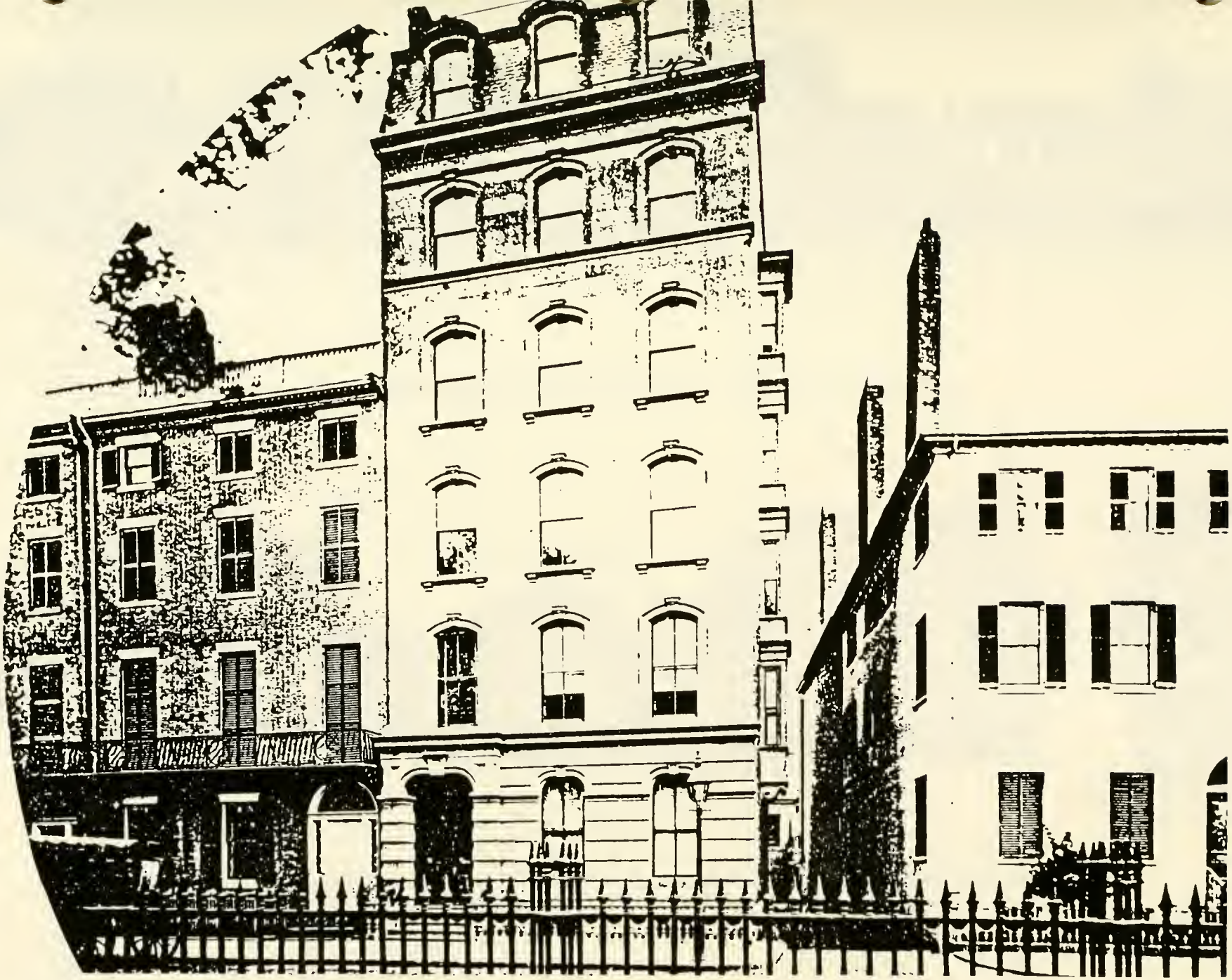
When constructed in 1859, the ground and second floor levels of 175 Tremont were brownstone, rusticated at the ground floor, with a door on the left and two window bays on the right. 174 Tremont was constructed in 1869 and the two lower floors of 175 Tremont either altered at that time or shortly after. Bow-windowed cast iron storefronts appear at the ground and second floors of 174 and 175 Tremont in drawings as early as the 1870's and in photographs until as late as 1925. The bow windows were removed some time after 1925, but the columns and lintels remain at the second floor level of both 174 and 175. The current wood and metal storefronts appear to date from these post 1925 alterations. At present, the ground level storefronts have been covered with mid-20th century materials and signs.

The original mansard roof of 175 Tremont and the combined mansard after construction of 174 Tremont was slate with metal roofing at the dormers only. The roof also originally had an open-work iron railing at the perimeter along with at least six massive brick chimneys with clay chimney pots as seen in photographs dating from 1899. In photographs dating from 1914 showing the construction of Avery Street, the chimneys at the center and north half of the roof are missing along with the railing. The mansard appears as copper in this same photo.

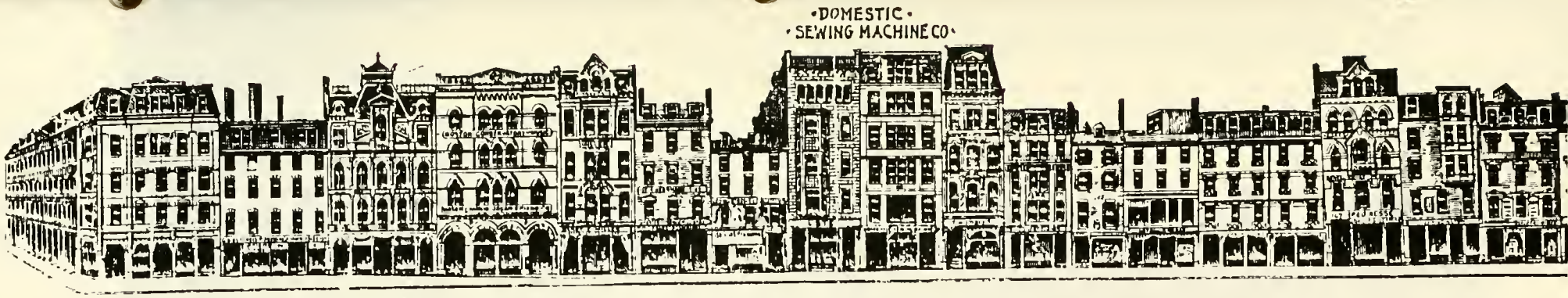
The Avery Street facade of the building was constructed some time after Avery Street was created in 1914. Originally a party wall, the existing brick, window openings and cast iron storefronts were added to this north wall. The fire escapes which run at each floor along the entire elevation were installed when the new facade was constructed.

The interior plan of the Evans House consists of a hallway circling the central stair and the elevator shaft with

suites of rooms along the perimeter walls. The most outstanding feature of the interior is the open mahogany staircase running from the second to sixth floors lit by a large oval skylight. The railing is heavy and moulded with modified square newel posts. Although partitions have been altered, some early finishes remain in the south building, including plaster cornices, ceiling medallions and marble mantlepieces. Finishes in the north building appear to date from the 20th century, most likely from the post 1914 alteration of the north facade. The north and south buildings are separated by a brick masonry bearing wall which has been penetrated with two large openings on each floor to connect the two buildings. Bathrooms, kitchens, closets and partitions have been added throughout the building as uses have changed from residential to commercial and back again.



Pre-1869 photograph of 175 Tremont Street prior to the construction of 174 Tremont and alterations to the ground and second floors (SPNEA Neg. 13765-B, Tremont Street (Between West and Boylston) File, Bostonian Society Neg. #44).



BUILDINGS ON TREMONT STREET, BOSTON, IN THE 1870 S

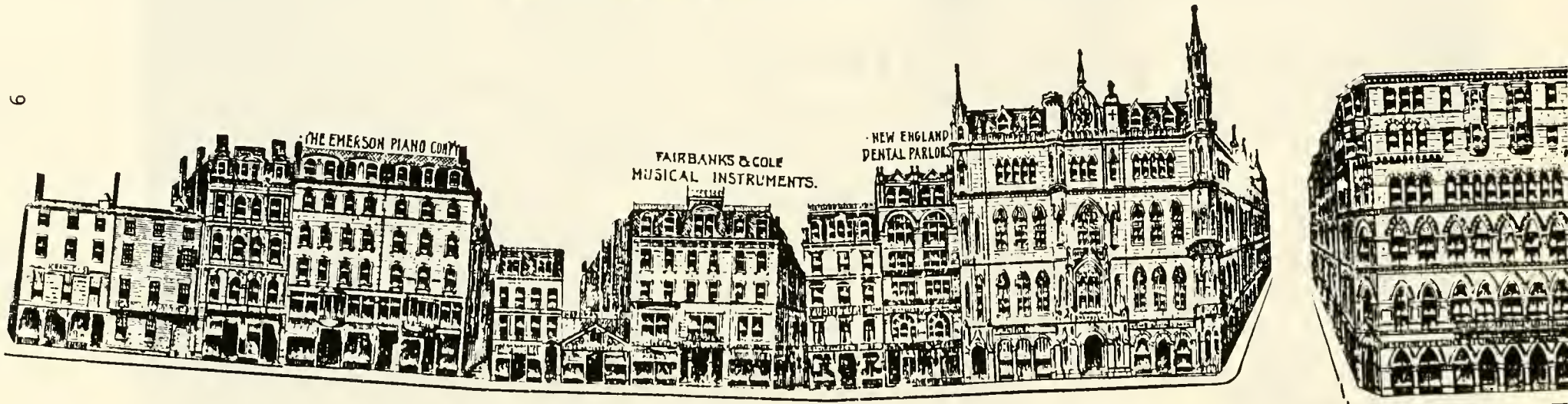
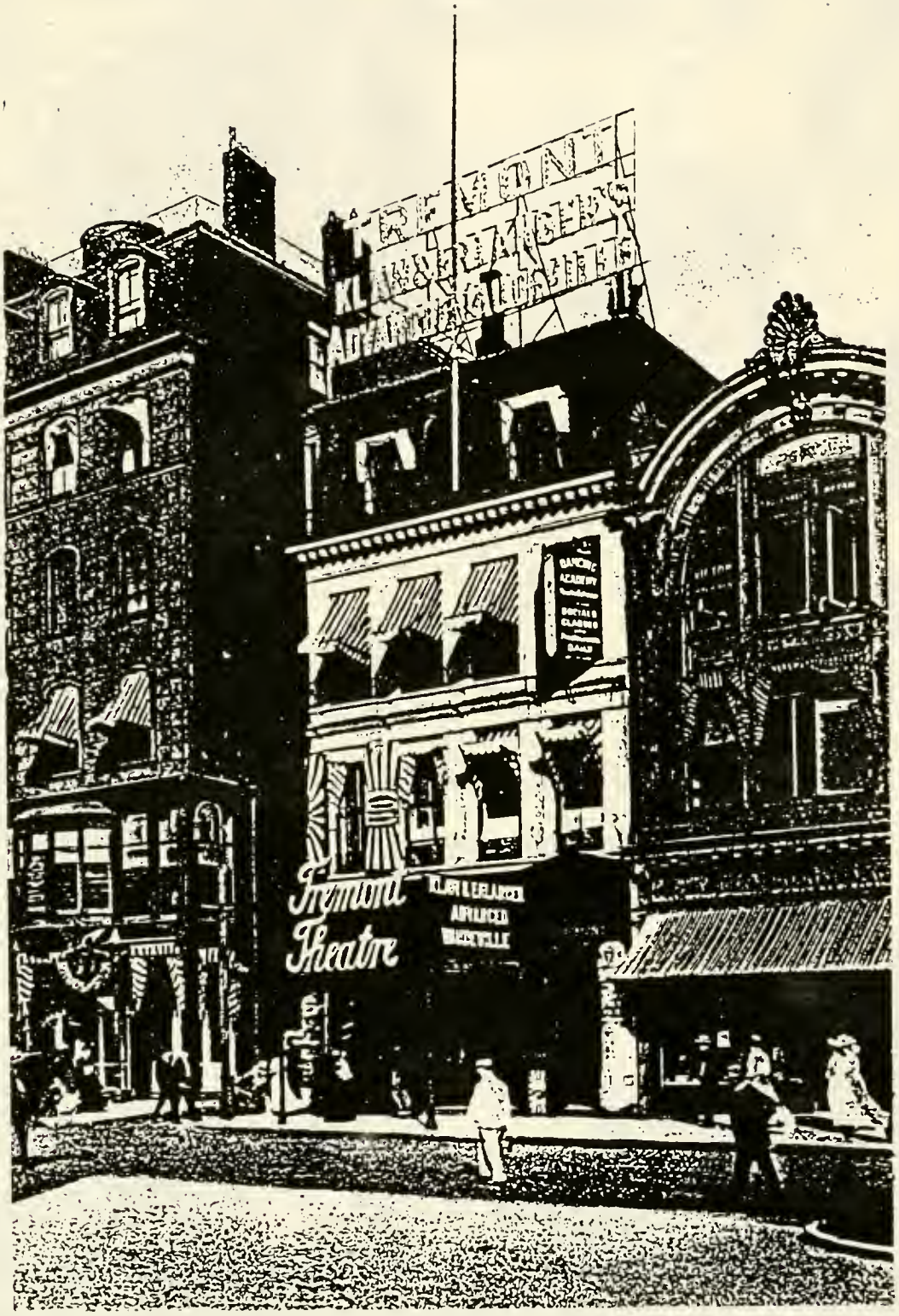


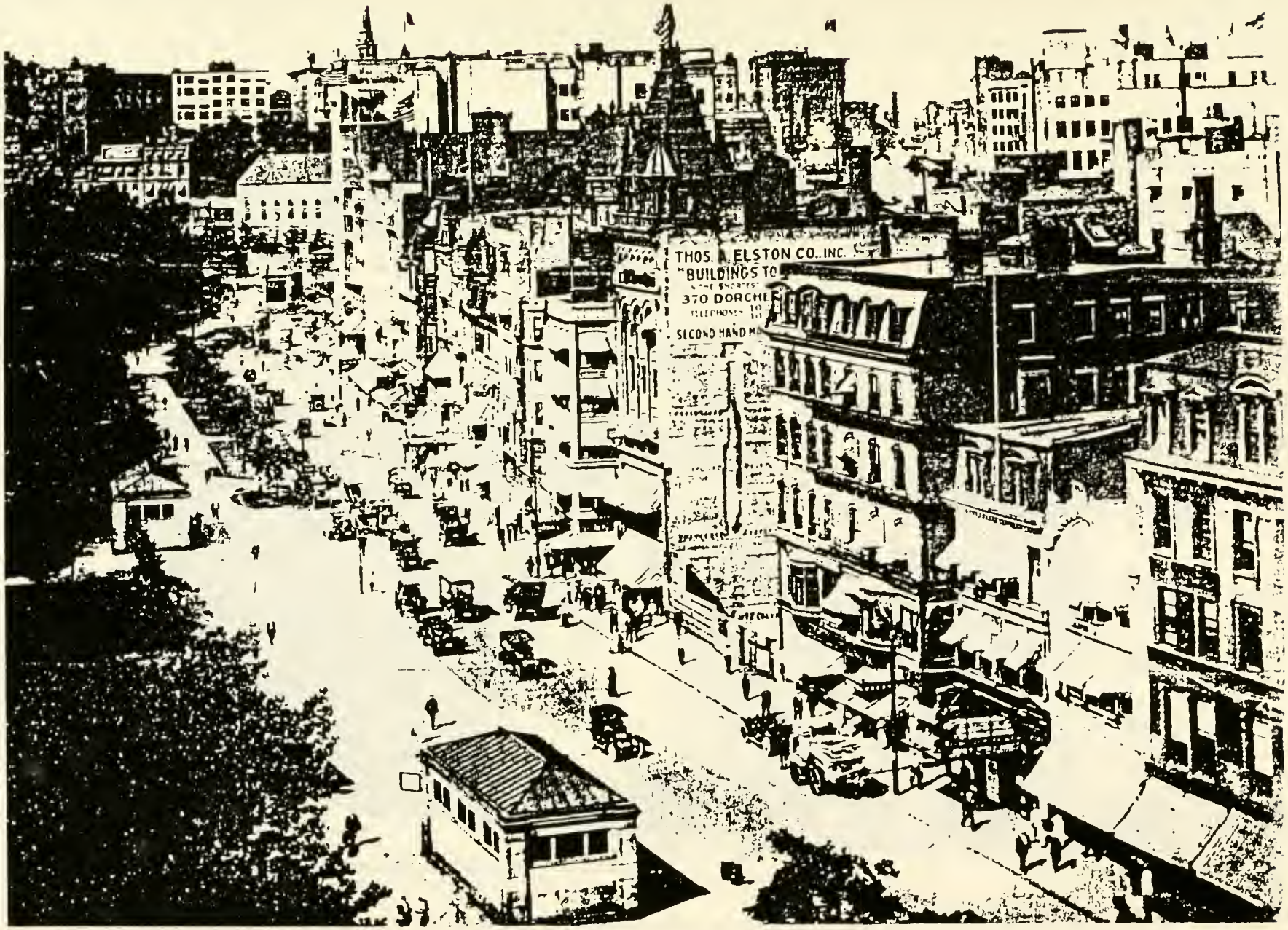
Illustration showing the Evans House in the 1870's (Boston Public Library, Fine Arts Department, Photo Collection).

Enlargement of a photograph dated August 1899, showing the Evans House with two story store-front, iron roof railing, and multiple large chimneys (SPNEA, Tremont Street File, #1289).

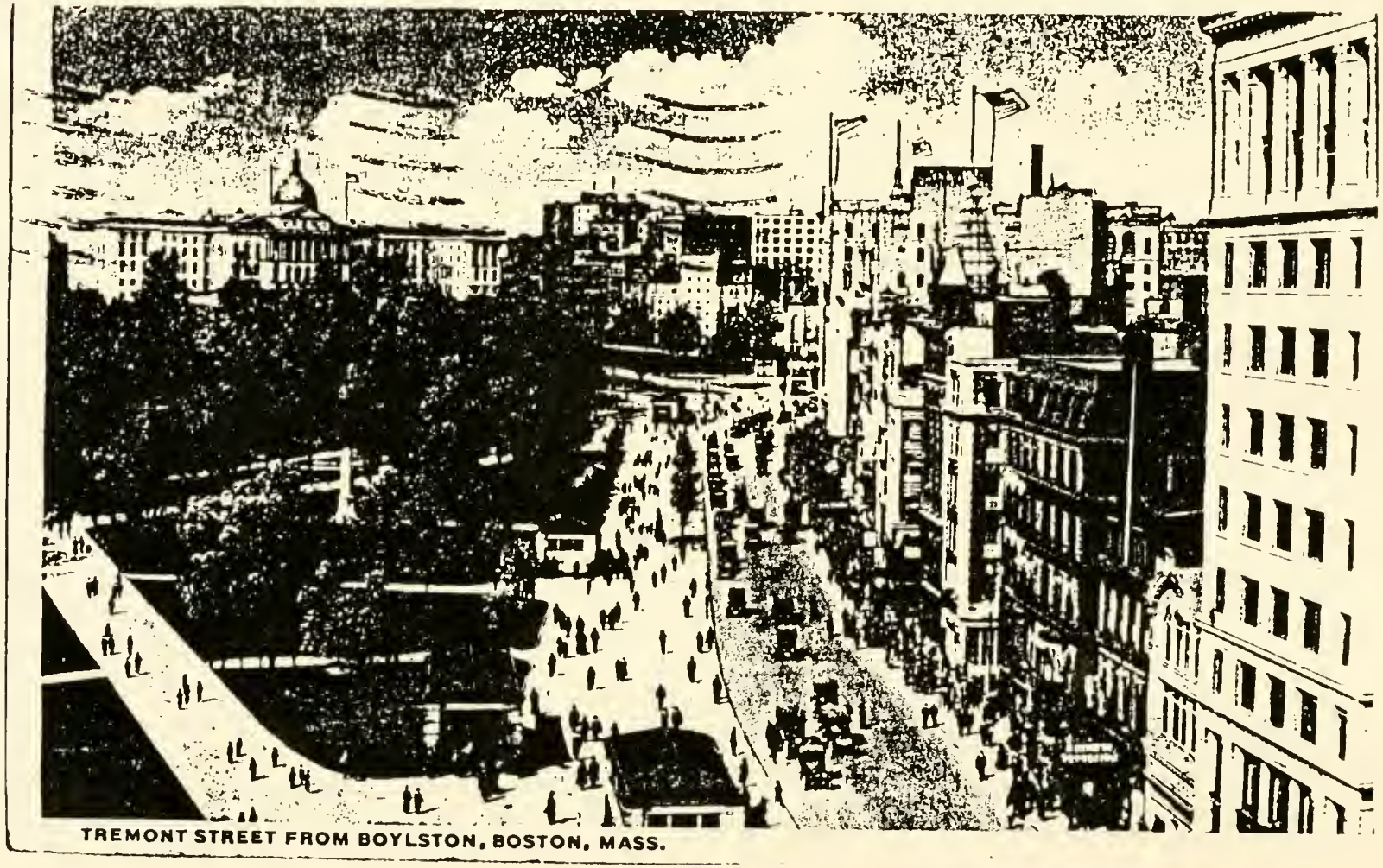
Tremont Theatre, Boston, Mass. 16544



Pre-1914 photograph showing the corner of the Evans House storefront with bay window. Note also, railing and chimneys at the roof (SPNEA Photo Collection).



Enlargement of a 1914 photograph, taken from the Colonial Building, showing construction of Avery Street. Note that the roof railings and chimneys have been removed (SPNEA, Tremont Street (Between West and Boylston, General) File, #01141, Halliday Historic Photo Co.).



Postcard, postmarked 1925, showing the Evans House Tremont Street facade after the opening of Avery Street between Washington and Tremont. Note that the bay windows at the storefront are still in place (SPNEA Photograph Collection).

DESCRIPTION OF EXISTING CONDITIONS

A close range survey of the exterior stone, brick, wood and architectural metals of the west and north facades of the Evans House was conducted on August 2-3, 1989. The purpose of the survey was to determine and record the existing physical condition of the exterior materials to provide a basis for evaluation of alternative restoration treatments. The recorded conditions are as shown on Condition Survey drawings 1 and 2, as described in the following text and as shown in the attached photographs.

West Elevation (Tremont Street)

Sandstone

The general condition of the brown sandstone which faces the entire west elevation is poor. Of the approximately 550 pieces of sandstone, only 45 pieces have not suffered some form of deterioration. As is typical of sandstone, the primary forms of deterioration are delamination and cracking of the stone and the next level of deterioration, loss of the face of the stone. Large areas of the facade where the stone has delaminated and the faces spalled off have been repaired with mortar. These mortar patches are of varying ages and quality, but in general, are in poor condition. Recent repair efforts did not attempt patching, but consisted of coating of the stone with a cementitious paint material.

There are small areas of minor surface exfoliation along the edges of otherwise sound stone units. As is typical of sandstone laid with the bedding plane parallel to the face of the building, there are areas of the stone and the patches which appear sound at the surface, but have internal delamination. This internal separation of the face of the stone or patch from the remainder of the stone is shown as hollow areas on the drawings. In addition to the above, there are miscellaneous holes in the stone as the result of removed anchors and there are several units of stone, particularly at the fifth floor window keystones, where the stone has shifted downward, opening the joints as much as 1/2".

Wood

Wood trim at the west elevation is limited to window frames and sash. The existing wood windows at the third through sixth floors appear to be original to the 1859 and 1869 construction of the building. The original configuration was a two-over-two light sash with a very simple wedge shaped brick mold at the perimeter of the wood frame. The configuration of several of the windows has been altered by

the removal of the vertical sash muntin to created a single light sash. The upper floor windows are in fair to poor conditon.

The wood of the upper floor windows is split and the surface weathered and punky. Joints in the sash and frames are open and loose to the extent that several of the sash have simply fallen apart. Glass is largely non-original and glazing putty is in poor condition or missing entirely.

The existing wood window frames and sash at the second floor level are, for the most part, contemporary with the post 1925 alteration of the storefronts. More recent alterations have been made for the installation of air conditioners. The wood has been painted more frequently than at the upper floors, is newer and is, therefore, in better condition. The wood is sound, with minor deterioration at the sills.

Architectural Metals

The existing copper and ferrous sheet metal cladding at the mansard roof is not original to the construction of the building and is in poor condition. The sheet roofing at the dormer roofs is ferrous sheet metal and is poor condition. The metal is corroded overall and large holes exist along the eaves. Aluminum fiber paint has been used to coat the eaves at several locations in an attempt to close the holes, but the coating has also now failed. The copper cladding at the sides of the dormers and face of the mansard is also in poor condition. The runoff from the ferrous metal dormer roofs has eroded and corroded the copper resulting in sizable holes in the metal. Areas of the copper have been previously patched as shown on the drawings. The cladding at the face of the north dormers is galvanized sheet metal as is the flashing which covers the wood window sills at various locations on the facade. Except for missing anchors and open joints, the galvanized sheet is in good condition.

The storefront at the ground and second floors is a combination of cast iron dating from the 19th century alteration of the lower floors of the building for commercial use and galvanized sheet metal from at least one later 20th century alteration. Both materials, where visible for inspection, are in generally good condition.

North Elevation (Avery Street)

Brick

The dark red, hard fired, face brick at the north elevation dates from after 1914 and is in good condition with the exception of localized damage at the window heads. The brick work at the upper jambs and heads of nine of the windows is cracked, bowed and spalled as a result of corrosion and expansion of the steel lintels. The brick is laid with a cream colored, relatively hard mortar, the joints being a standard 3/8" wide. The mortar is also in good condition with minor weathering of the surface. The fire escape frames and anchors, which were installed when the wall was constructed, are set into the brickwork and if removed, will necessitate repair at each of the anchor locations. Corrosion from the fire escapes has stained the brick below the anchor and frame locations.

Limestone

Limestone exists at the sills of the windows at floors three through six. The stone is in good condition. Half of the stone sills have cracked vertically through the section of the stone. The cracks in most cases are quite old and appear to have occurred shortly after installation; weathering of the stone along the edges of and within the cracks is equal to the overall weathering of the face of the stone. The cause of the cracking is not apparent.

Wood

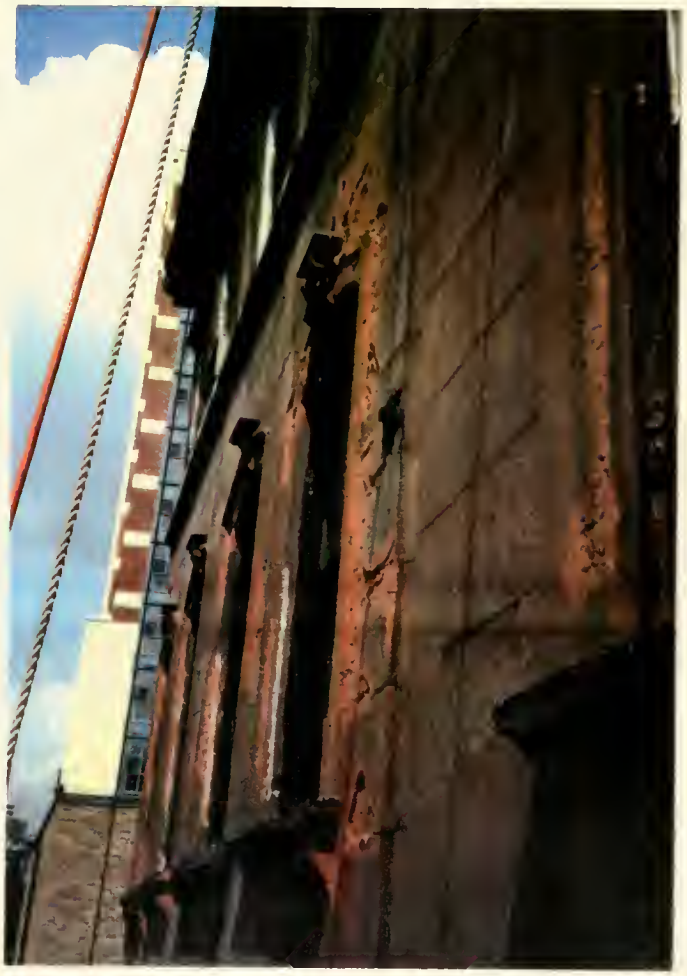
Wood at the north elevation is limited to the windows. The existing windows at floors three through six are original to the post 1914 construction of the facade and are in good condition. The wood has not been regularly painted so that there is some splitting of the sills, brick molds and sash stops and some surface deterioration. There are also isolated areas of rot at the sills. The sash are generally sound and in operable condition with open joints at 25% of the windows. The glazing putty is in poor condition or missing; the glass is in good condition with some cracked and broken panes.

The wood window frames and sash at the second floor appear to date from the post 1914 installation of the storefronts. They are in good condition except where altered for installation of air conditioners and doors to the fire escape.

Architectural Metals

The copper coping at the roof is in fair condition; seams are open and the metal is torn at anchors and connections. The cast iron at the ground and second floor is in good condition with the exception of two areas where the cap plate of the cornice is cracked and a section is missing. The steel lintels at the upper floor windows have failed at all locations. Fortunately, the lintels were not set into the brickwork at the window jambs when the wall was constructed, thereby limiting the damage somewhat. The lintels were not flashed when installed and the steel has corroded and expanded. The fire escapes have not been painted or otherwise maintained for many years. The steel is corroding, but basically sound.

General view of the brownstone at the third floor of 174 Tremont.



General view of the brownstone at the fourth floor of 174 Tremont.

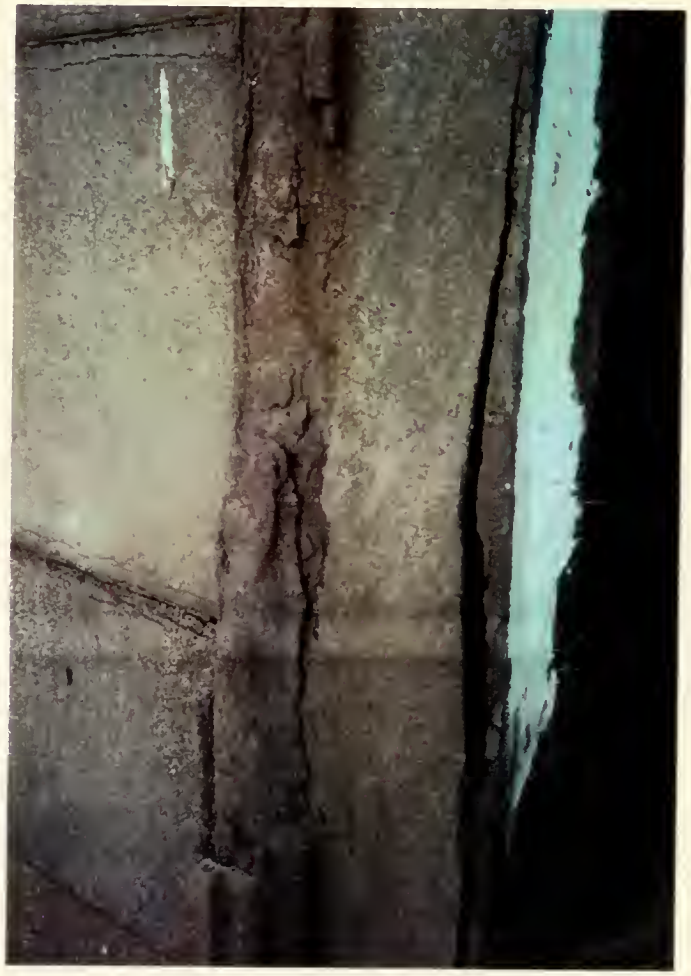
Detail of window head and keystone showing delamination and spalling of the stone resulting in loss of detail.

Detail at window sill showing spalling of the stone and loss of the sill bracket detail. Recent repairs have consisted of coating the stone with cementitious paint.

Detail of window head and keystone showing spalling of the sandstone. Mortar repairs of keystone and surround are detaching from the stone.

Detail at the sill of a window showing the spalled face of the sill bracket. This condition is typical of all bracketed sills.

Severe delamination of the surrounds at the fourth floor of 174 Tremont. This condition is typical of the fourth floor windows.



Detail of the photo above. Large sections of delaminated stone are loose and most of face has already been lost.

Detail of the edges of the stone at the reveal between 174 and 175. Stone appears sound on the surface but the face is separated from the body of the stone.

Detail of the edge of the stone at the reveal between 174 and 175 showing typical cracking and delamination.

Detail of delamination and cracking along the projecting sills. Note the condition of the mortar patching at the upper left. The overall cracking of the patch is typical.

Delamination and cracking at the projecting sill course. The sill has been previously patched, but the stone continues to deteriorate under the patch. Also shown is loss of stone at the surround.

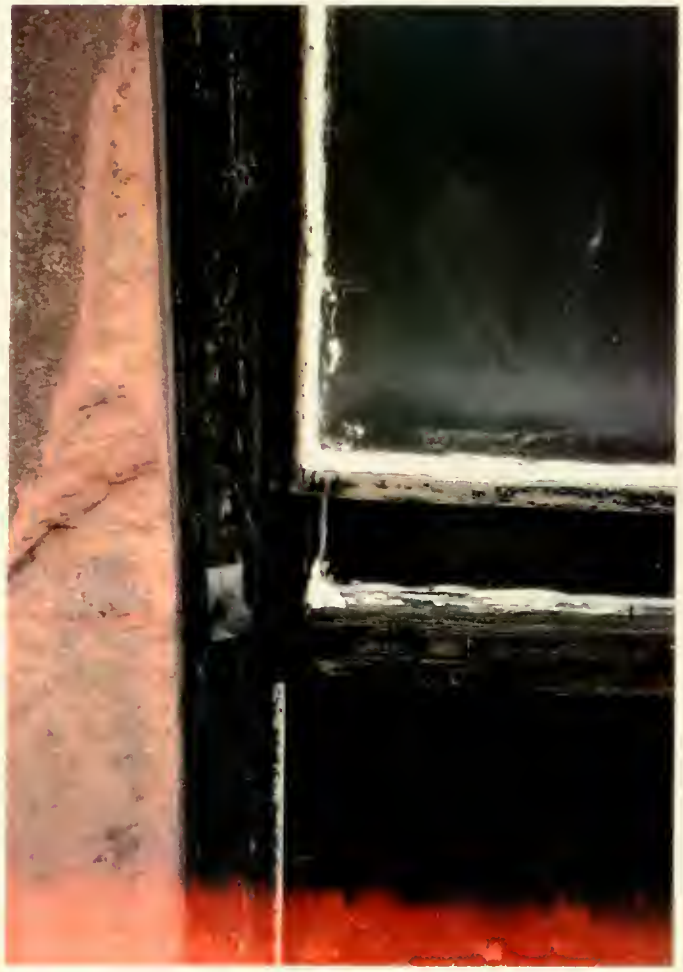
Typical cracking which has occurred along the edges of an otherwise sound stone area. This cracking is often an indication of internal delamination.

Two different eras of patching are visible, both of which have failed. Patches are typically cracked and are separating from the stone behind.

Cracking and delamination along the window surround is typical throughout the stone which remains in place.

Cracking and delamination along the jamb of this window is also typical of the jambs where stone remains in place. Note also the condition of the window frame and sash.

Typical wood window frame and sash at the west elevation. Wood is split and weathered. The center muntin of bottom sash has been removed and a single piece of glass installed.

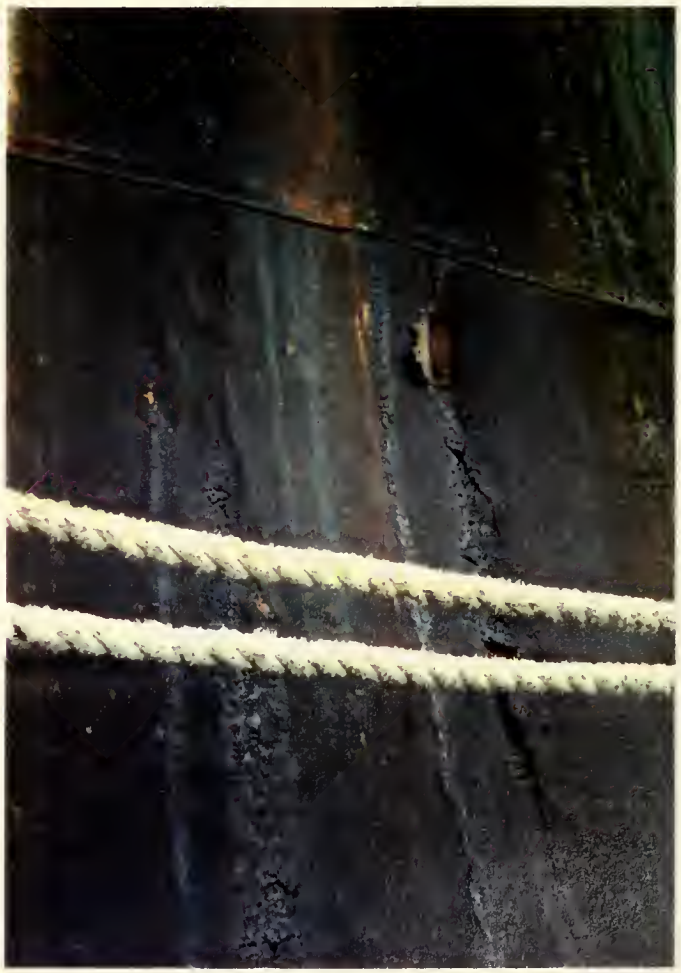


Detail of a typical west elevation window. Wood is split and weathered, joints are open, and putty is in poor condition or missing.

General view of the copper mansard and dormer windows at the sixth floor. Copper is in poor condition as a result of run off from the dormer roofs which has eroded and corroded the metal. Galvanized sheet has been used to cover the deteriorated wood sills. Note previous patches in the copper.

Detail of the wood window frame at the sixth floor of 174 Tremont. Wood is split and heavily weathered. Galvanized sheet metal at the face and sills of the dormers is in good condition except for missing fasteners.

Detail view of the mansard copper. Run off from the dormer roofs has eroded and corroded the copper.



Detail of the mansard copper. The holes are typical of the run off areas adjacent to the dormer windows.

View of the top of the south dormer roofs. Ferrous sheet metal is in poor condition. Note large holes along the eaves of the roof.

Detail of the north dormer roofs. Metal is in poor condition. Note seams in copper roof coping which have been repair with roofing cement.

General view of the Avery Street brickwork at the sixth floor. The dark red brick and mortar are in good condition.

Detail of spalling of the brickwork at the window heads. Spalling is the result of corrosion of the steel lintels.

Detail of bowing and spalled brick at a window head on Avery Street. Lintel has corroded and expanded. Fortunately, the lintels were not set into the brick at the jambs and damage is less. Note staining of the brick from the fire escape.

Detail of corroded steel lintel. Lintels were not flashed when installed. Note good condition of the window frame and sash.

Detail of bowing and spalled brick at the corroded lintels at the Avery Street facade. Staining at the head of the window is the result of corrosion of the fire escape above.

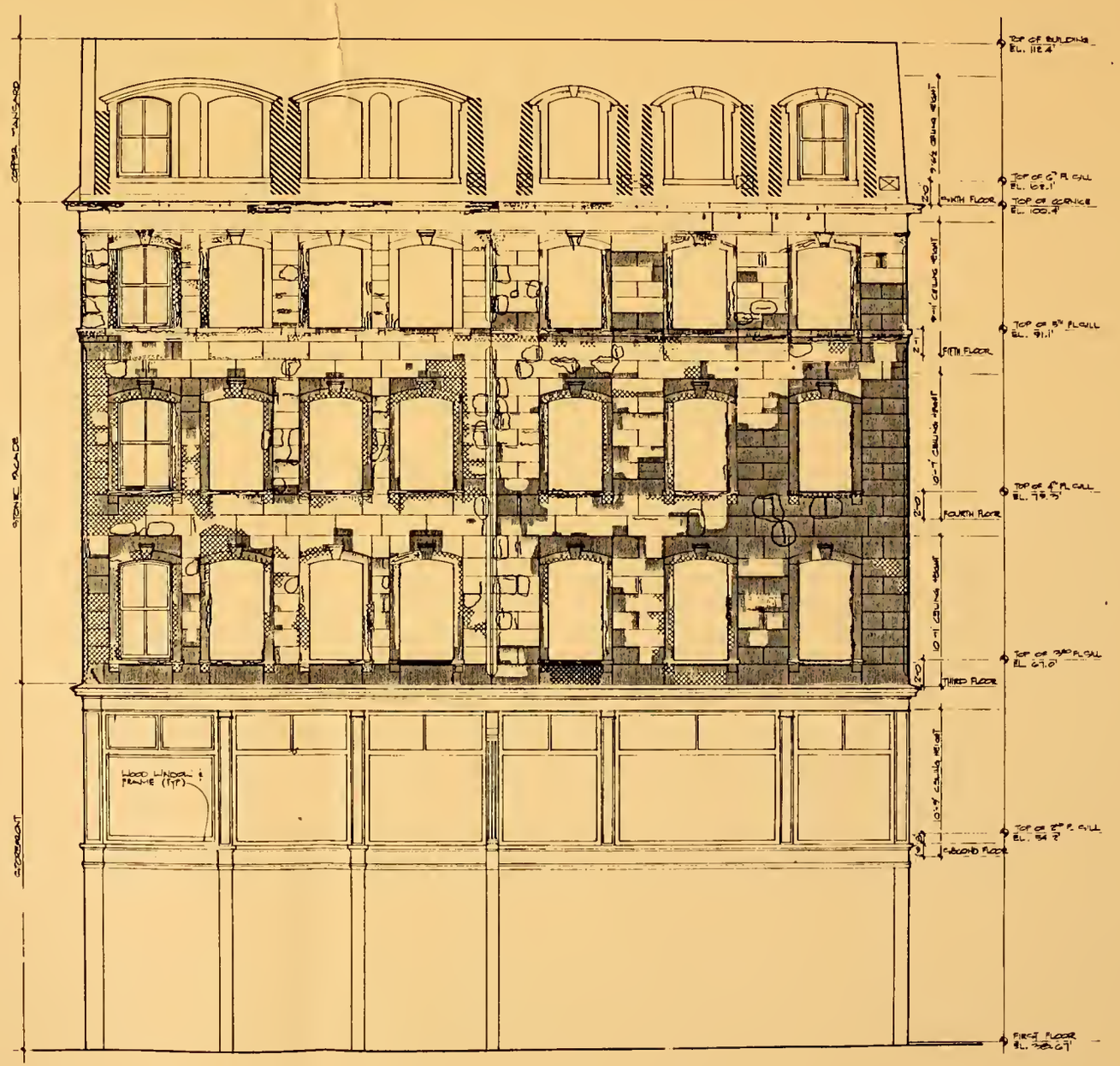
Detail of a typical limestone sill at the Avery Street windows. Crack shown is typical of those noted in the sills. Note the weather condition of the edges of the crack indicating it has been there for some time.

Typical condition of the Avery Street windows: wood is split and slightly weathered, putty is deteriorated or missing and sash stops are in poor condition.

Typical condition of the wood sills at the Avery Street windows. Also shown is the typical condition of the limestone sills.

Shown is one of the isolated areas of rot in the wood window sills along Avery Street. Note missing sash stop which is common.

Detail view of the cap plate of the second floor cast iron storefront cornice. This is typical of only two locations.



KEY

- PATCHED STONE
- STONE FACE MISSING
- EXFOLIATION
- CRACKS/DELAMINATION
- HOLLOW:SEPARATED STONE OR PATCH
- ERODED COPPER
- PATCHED COPPER
- HOLES
- SHIFTED STONE

WEST ELEVATION

Scale: 1/4"=1'-0"

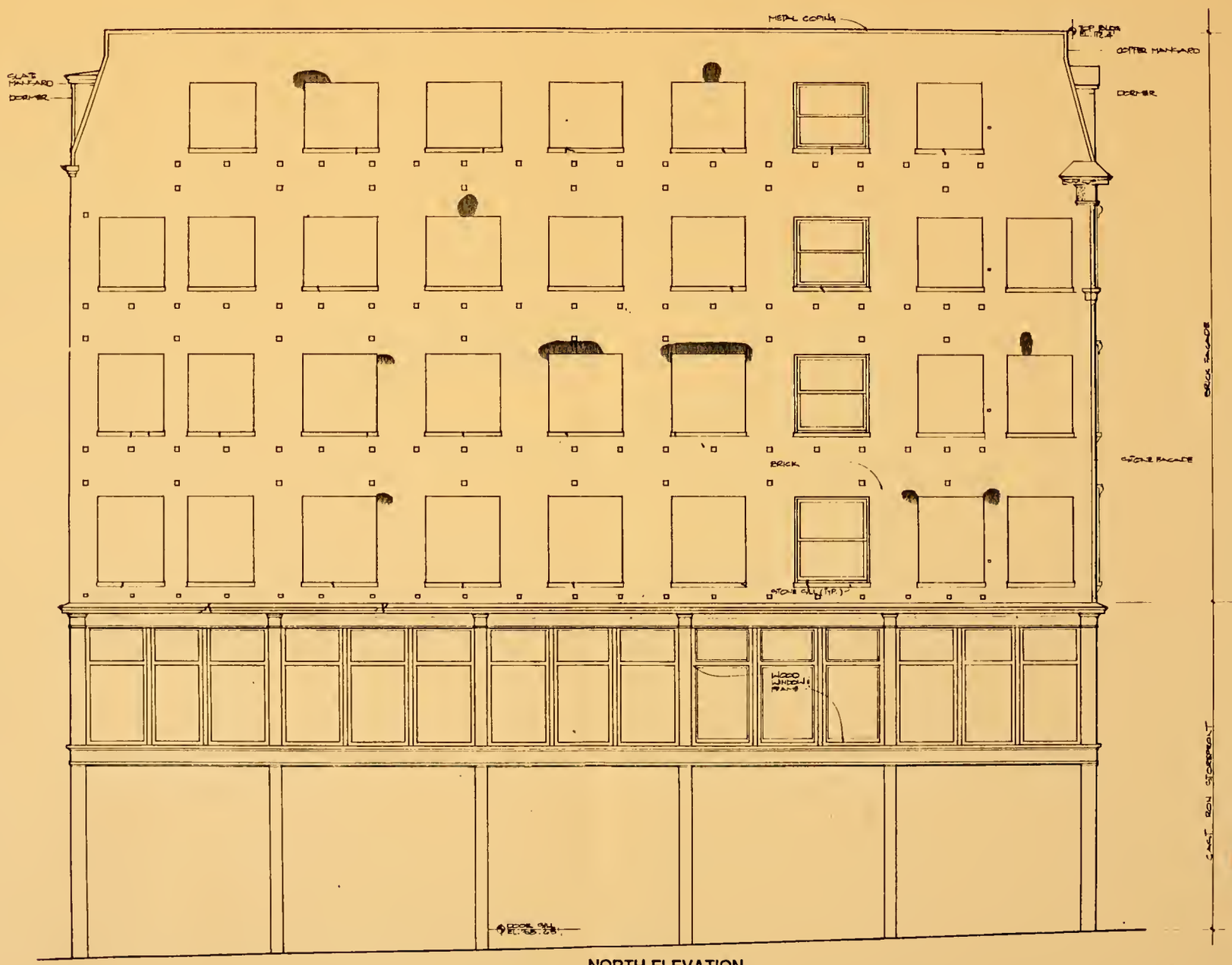
Date 9/89

WEST ELEVATION

Oehrlein & Associates

Condition Survey
Evans Building
174-175 Tremont Street Boston, Massachusetts

1



NORTH ELEVATION

Scale: 1/4"=1'-0"

KEY

- SPALLED/CRACKED BRICK
- CRACKED STONE OR CAST IRON
- FIRE ESCAPE ANCHORS

9/89

NORTH ELEVATION

Oehrlein & Associates

Condition Survey
Evans Building
174-175 Tremont Street . Boston, Massachusetts

2

STRUCTURAL EVALUATION

The F.D. Rich Company of Boston engaged Weidlinger Associates to perform a structural evaluation of the Evans House at 174-175 Tremont Street in Boston. The purpose of the evaluation is to assess the current structural stability of the building and its potential adaptability for the inclusion in the Commonwealth Center project.

The information presented in this report presents a composite of data obtained from various locations on different floors of the building. An entire floor could not be surveyed due to inaccessible spaces throughout the building. Our main assumption is that levels 2 through 6 are of typical construction.

History

The Evans House is two separate six-story structures on the north and south sharing a common bearing wall (see SK-1). The south building, 175 Tremont, was constructed in 1859 while the north building, 174 Tremont, was erected in 1869. The original design intent for both buildings was residential or hotel use.

During the 1870's the first two levels were converted to commercial space and at that time, a cast iron supported storefront facade replaced the original building face for the first two levels on Tremont.

In 1914 Avery Street, which borders 174 Tremont on the north, was created. An adjacent building to the north was demolished in order to allow room for the required street width. At this time a new facade was added to the north elevation consisting of cast iron storefront for the first two levels and a brick facade above.

Building Description

The Evans House is a six story structure and basement with overall dimensions of approximately 60'-0" x 85'-0". It is bordered by Tremont Street on the west and Avery Street on the north. (See photo #1)

The floor framing system is wood joists of various sizes which span approximately 29'-0" (north/south) from the exterior walls to the party bearing wall which divides the 60'-0" dimension in half. The wood joists are pocketed into the north and south bearing walls.

The east and south facades are 12" thick brick masonry walls stacked atop the foundation wall and continue to level 6 without being relieved on the intermediate floors. (See photo #2)

The west facade is a cast iron storefront for the first two levels which support a brick and sandstone wall from levels 3 to 5.

The north face consists of a two story cast iron storefront that supports a brick bearing wall from level 3 up to level 6. (See photo #3)

An additonal bearing wall system located approximately 10'-0" south of the party bearing wall was constructed at a much later date. This wall consists of rolled steel columns and miscellaneous beams made up of channels and plates for the first two floors and wood stud walls from level 3 to the roof. The added bearing walls are brick at the basement level.

There is a noticeable slope in the floor framing of 175 Tremont from level 2 to level 6 pitching inward toward the added bearing wall.

A series of test pits around the exterior perimeter and at the interior in the basement reveal that the foundation walls are a mix of granite block and brick masonry bearing on compacted granular fill.

Test pit No. TPIE excavated in the basement between the two interior bearing walls revealed that the soil under the east half of the original party bearing wall has been washed out for at least 10'-0" of its length. The full extent of the non-bearing could not be measured and is unknown at this time. At the areas which could be observed, there is currently no soil supporting the wall for at least 8" below the bottom of the wall.

Assessment of Conditions

Floor System

The wood joists observed are in good condition with minimal signs of deterioration. Generally, the total superimposed load capacity of the 174 Tremont Street portion of the building is 45 PSF for the typical 29'-0" span and 175 Tremont varies from 50 PSF to over 100 PSF due to the added bearing wall which reduces the span to 19'-0".

Water damage due to roof leaks, water infiltration at the window sills, at cracks in the facades and from an archaic plumbing system has resulted in minor rot in the wood floor framing and flooring of the building.

South and East Facades

The east and south facades are constructed of a very dense brick which has resisted weathering very well. The 1/16"

mortar joints have weathered and recessed quite uniformly to a distance of 1/4".

Settlement of the east wall is evident from observing cracks especially at the interface between 174 and 175 Tremont at the party wall line on the east face. (See photos #4 and #8)

The stone sills and lintels on the east and south elevations are badly deteriorated.

Neither the east nor the south wall are tied back to the floor diaphragms with any lateral resisting connection.

West Facade

The west facade is very weathered and deteriorating sandstone. Large patches of spalling are quite evident. Stonework around the perimeter of the windows is in bad condition with extreme levels of deterioration and cracking.

The west wall is not laterally restained to the floor system.

North Facade

Cracking of the brick is evident at the head and upper jambs of the window openings, and there are numerous splits in the limestone sills. The steel lintels over the windows are badly rusted.

The north wall is not laterally restrained to the floor system.

Party Bearing Wall and Added Bearing Wall

The interior bearing walls have gone through substantial settlements. This is quite evident when observing the slope of the floor framing in the main hallway at 175 Tremont Street.

Test pit TPIE exposed an extreme non-bearing condition of the party bearing wall for 10'-0" to 20'-0" of its length. The wash out of fill is possibly due to leaking of an adjacent soil pipe.

Due to the use of rolled steel shapes, it is concluded that the added bearing wall was installed in the early 1900's. This wall may have been constructed due to the settlement of the party bearing wall, to arrest the deflection of the floor framing or to increase the floor loading capacity by reducing the span. This added wall now relieves 75% of the original 175 Tremont Street load on the party bearing wall.

Sidewalk Vaults

There is an extension at the west end of the basement which projects out beyond the west building face under the sidewalk. This vault area is constructed with rubble granite block walls and a concrete slab which forms the sidewalk. The steel lintels supporting the sidewalk slabs are badly rusted. The slab itself does not have the code required load carrying capacity of 250 PSF.

Conclusions

At a minimum, 10'-0" of the party bearing wall has no support. This condition will eventually lead to major settlement unless the wall is underpinned.

The west sandstone facade is in extremely poor condition and may soon be a hazard to pedestrian traffic due to major spalling and cracking of the stone.

The stone and brick facades are not laterally restrained to the floor diaphragms. This condition is unstable for seismic and lateral wind loading.

As lateral restraining elements against earthquake and wind loads, the east, south and party bearing walls are the only stiff elements capable of resisting lateral loads providing the floor diaphragms can transfer shear to them. Currently there is not a sufficient connection to transfer this force. The west and north walls are not able to resist lateral forces because of the large openings at the first and second floors.

The floor system has varying capacities from 45 to 70 PSF (see drawing S1). Some of these capacities are not adequate for spaces of public assembly (100 PSF LL), corridors (80 PSF LL), hotel rooms (40 LL + 20 partition) or office (50 PSF LL +20 partition) as well as superimposed dead loads such as floor tiles and mechanical equipment. The current floor system does not provide the 2 hour fire separation required between floors.

Recommendations

Option 1: Complete Restoration

The original party bearing wall must have its bearing restored. The appropriate foundation stabilization solution can be provided with studies in coordination with Haley and Aldrich.

The west facade is in serious need of restoration. Cracks will need to be filled with compatible epoxy grout. Spalled

surfaces will need to be patched and deteriorated window sills and jambs require reforming.

All four facades require stabilizing connections to the floor system to transfer lateral loads to the lateral resisting elements. This can be accomplished by installing a mechanical connection between the floor diaphragms and the exterior walls.

Renailing of the floor planks and or installation of plywood decking is necessary to insure adequate diaphragm.

To increase the floor loading capacity, it is necessary to reduce the 29'-0" span at the north building. This could be achieved either by introducing a new bearing wall or structural beams and columns on new foundations.

The vaults under the west sidewalk currently cannot withstand lateral surcharge pressures due to heavy fire truck loading and may collapse. These walls require lateral bracing as well as construction of a new slab.

Option 2: Facade Restoration

Restore the north and west facades only. These faces will need to meet the seismic and wind loading code restraint requirements. Restraint of the facades will be required at the floors and at mid points in the walls. This restraint can be achieved by external bracing with through wall anchors, internal bracing with through wall anchors, an 8" reinforced concrete backup wall with ties to the existing walls or by dismantling and reconstruciton of the walls.

Reconstruct the entire interior framing system to code required capacities and anchor the new frame to the existing facades.

Summary

Major structural components of the this building are in distress and in need of attention in order to adapt it to new use as part of the Commonwealth Center project.

It is obvious tha the Evans House has gone through many renovations to adjust the structure for a particular use. It is also evident that the level of maintenance is the past has been minimal and its rate of decay will continue to increase.

Numerous areas could not be observed and may considerably increase the assessment of the current deterioration in the structural stability and code compliance of the structure.

Design Notes

WEIDLINGER ASSOCIATES
Consulting Engineers

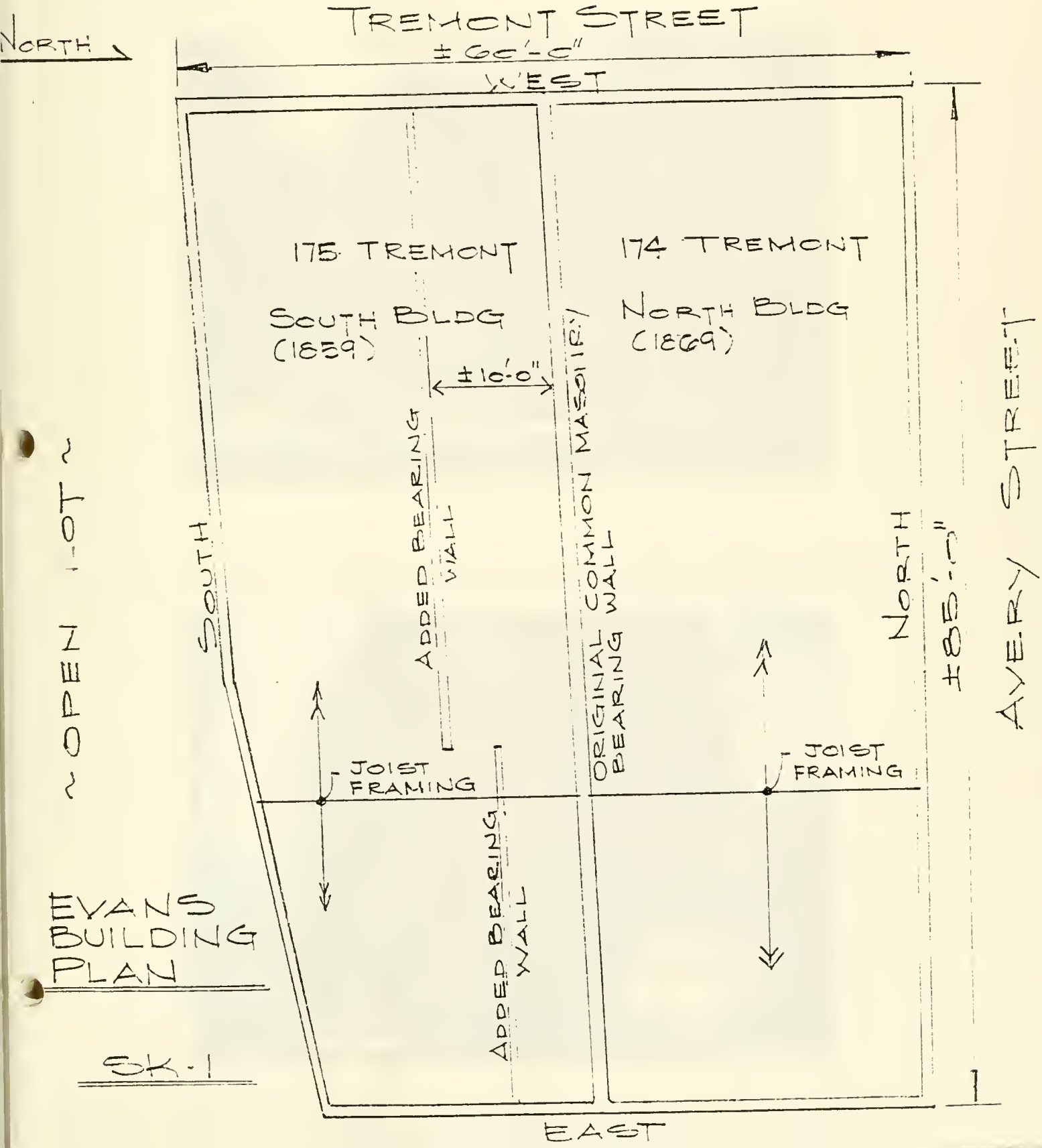
NY	MA	CA	VA	

Page: of:

Job no.:
Project: EVANS BUILDING

Checked by:
Date: 8-11-89

Designed by:
Date:



EVANS BUILDING PLAN

SK-1

#1. WEST ELEVATION - TREMONT ST.

#2. EAST AND SOUTH ELEVATIONS

#3 NORTH AND WEST ELEVATIONS

#4 EAST ELEVATION

Job no.:

Project:

Checked by:

Date:

Designed by:

Date:

#5 EAST ELEVATION

#6 EAST ELEVATION

#4 EAST ELEVATION

#5. EAST ELEVATION

#9. WEST ELEVATION

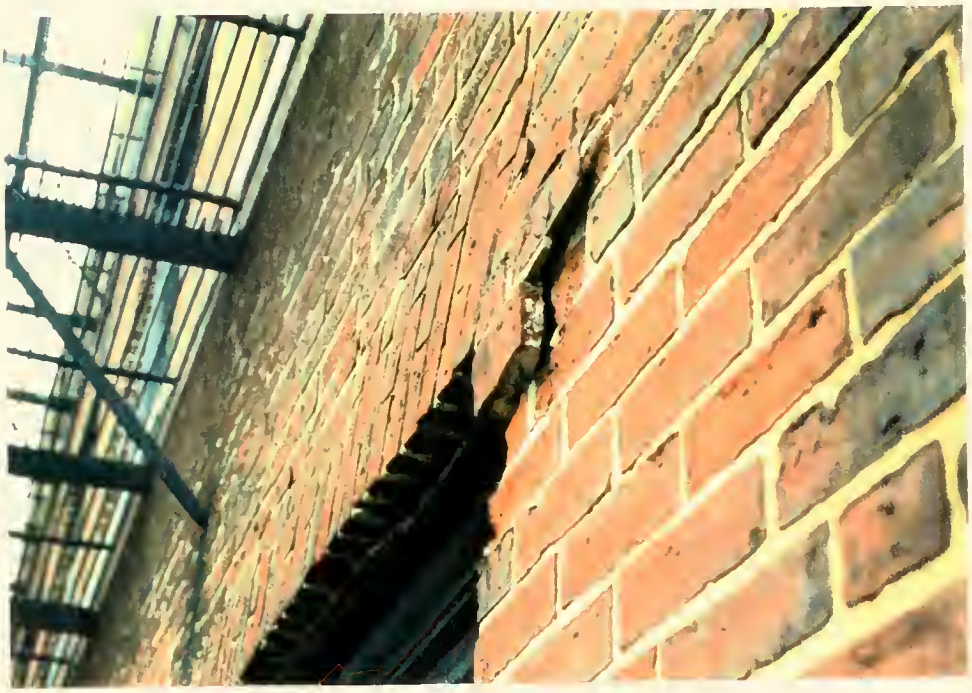
#10. WEST ELEVATION

Job no.:
Project:

Checked by:
Date:

Designed by:
Date:

#11 WEST ELEVATION

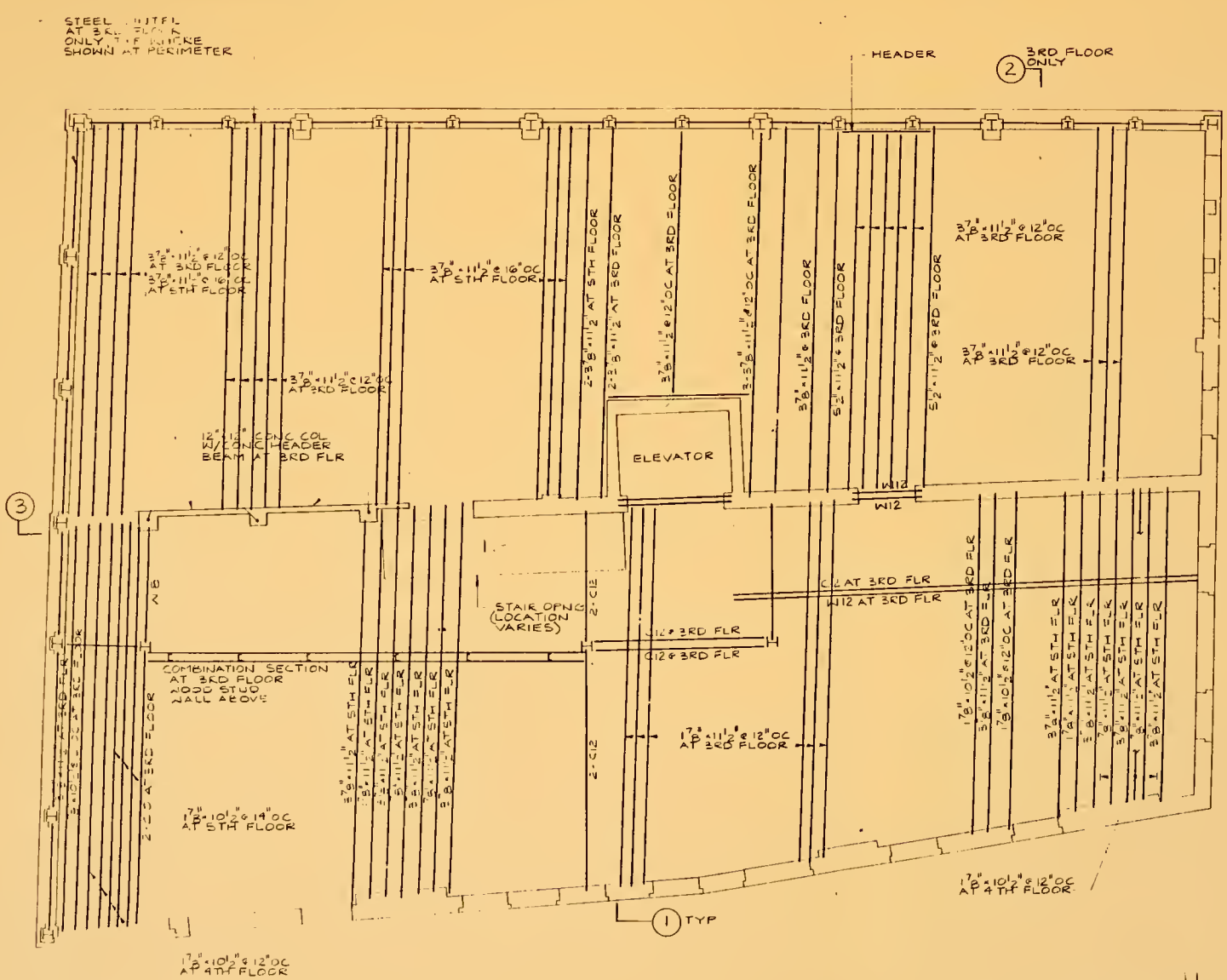


#12 NORTH ELEVATION

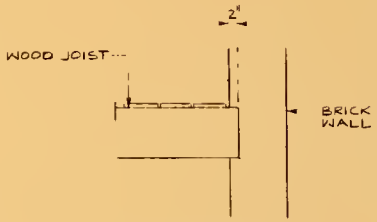
#12 North Elevation

NOTE:
ASSUMED F_b = 1000 PSI
(WOOD BENDING STRESS)

LOADING SCHEDULE			
JOIST SIZE	SPACING	SUPERIMPOSED LOADING	SPAN
3 7/8" × 11 1/2"	12" OC	60 PSF	29'
3 7/8" × 11 1/2"	16" OC	45 PSF	29'
5 1/2" × 11 1/2"	12" OC	90 PSF	29'
1 7/8" × 10 1/2"	12" OC	60 PSF	19'
1 7/8" × 11 1/2"	12" OC	70 PSF	19'
3 7/8" × 11 1/2"	12" OC	150 PSF	19'
1 7/8" × 11 1/2"	14" OC	50 PSF	19'
3 7/8" × 11 1/2"	16" OC	116 PSF	19'



COMPOSITE EXISTING FRAMING PLAN - FLOORS 3 THRU 6



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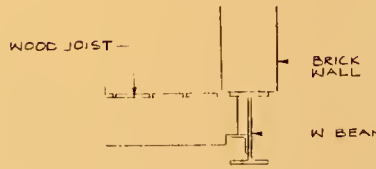

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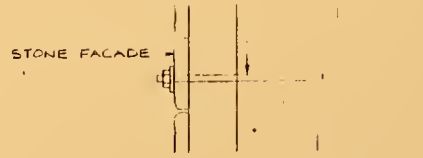


3 SECTION

8-15-89

STRUCTURAL "AS-BUILT" FRAMING PLAN

EVANS BUILDING

174-175 TREMONT STREET BOSTON, MASS.

S1

Haley & Aldrich, Inc.

Consulting
Geotechnical Engineers,
Geologists and
Hydrogeologists

58 Charles Street
Cambridge, MA 02141
617 494-1606
617 577-8142, Fax

15 August 1989
File No. 5746-02

Weidlinger Associates, Inc.
44 Brattle Street
Cambridge, MA 02138

Attention: Mr. Stephen Lew

Subject: Commonwealth Center Project
Evans House Study
Results of Test Pit Excavations

Gentlemen:

This letter presents the results of the test pit excavations and our evaluation of the geotechnical issues associated with the foundations of the Evans House. We understand that Weidlinger Associates is investigating the structural issues associated with this study.

The Evans House is a 5-story masonry structure with wood floors and roof supported on masonry and stone load bearing walls. The Evans House consists of two structures; 175 Tremont Street, constructed in 1859 and 174 Tremont Street, constructed in 1869, excepth that the north bearing wall was constructed in 1914 during widening of Avery Street. The purpose of the test pit excavations was to determine the condition of the load bearing foundation walls from ground surface to the bearing level and to evaluate the foundation bearing materials.

A total of six test pits were excavated by Jeremiah Sullivan Sons between the period 3 to 8 August 1989 at the locations shown on Figure 1. Three test pits (TP-1D, E, and F) were hand excavated inside the structures to determine conditions at the interior bearing walls. Test pits TP-1, 1A, and C were machine excavated adjacent to the exterior bearing walls. The test pit excavations were monitored by Haley & Aldrich, Inc. and test pit logs were prepared. Conditions at each test pit were also documented by photographs.

Offices
Glastonbury, Connecticut
Portland, Maine
Bedford, New Hampshire

Affiliate
H & A of New York
Rochester, New York

The results of the test pit excavations are shown on Figures 2 through 7 in plan and section. A summary of each test pit follows:

TP-1: Excavated along the south wall of 175 Tremont; foundation wall consists of unmortared rough cut granite blocks with areas of brick and loose concrete down to foundation level, approximately 9.5 ft. below ground surface. Foundation wall was bearing on very dense gravelly sand, probably off-site fill.

TP-1A: Excavated along the east side of 175 Tremont; foundation wall consists of unmortared rough cut granite blocks with areas of brick and loose concrete down to foundation level, approximately 8.2 ft. below ground surface. Foundation wall is bearing on very dense gravelly sand, probably off-site fill. An abandoned 12-in. diameter brick sewer was encountered running through the wall. The sewer invert was approximately at the wall bearing level. Loose fill was encountered in the annular space between the pipe and the wall. Three clustered oil fill pipes (abandoned) were encountered running through the wall.

TP-1C: Excavated within an existing vault space on the east side of 174 Tremont; foundation wall consists of mortared brick constructed of cut granite block at bearing level approximately 10 ft. below ground surface. Remnants of the previous party wall were encountered. Foundation wall is bearing on granular fill, approximately 1 ft. thick, overlying natural marine deposits consisting of stiff clay and sand.

TP-1D: Excavated within the sidewalk vault adjacent to the southwest corner of 175 Tremont; foundation wall consisted of mortared cut granite blocks constructed on granite block footings bearing approximately 3 ft. below the basement floor grade. Footing is bearing on compact granular fill overlying natural marine deposits.

TP-1E: Excavated within the existing basement of 175 Tremont, this test pit exposed both the party wall and an interior bearing wall. The interior wall consisted of a brick wall constructed on a granite or slate footing bearing on sand fill. Remants of previous brick foundation walls were encountered between the party and the interior bearing walls. It appears that previous foundations or other structures exist below the

basement slab and in some cases below the bearing level of the load bearing walls. A 6-in. diameter cast iron sewer runs beneath the slab between the bearing walls.

The party wall is a combination of brick, concrete and granite block. Granite blocks were not continous in the horizontal direction but observed in a vertical column from within 1 ft. of the bearing to the street floor level. The brick structures encountered in this area appeared to be sewer or drainage structures or remants from previous foundations. An extensive void area, approximately 12 inches (horizontal) by 2 to 3 inches (vertical) was observed beneath the party wall extending at least 10 ft. in plan from the exposed underside of the wall. The soil material encountered at the bearing level of the party wall consisted of granular fill.

TP-1F: Excavated within the basement corridor adjacent to the northeast corner of 175 Tremont exposing the party wall between the two buildings. The party wall consisted of mortared brick bearing directly on a compact granular fill approximately 3.3 ft. below the basement floor grade. A drain or sewer manhole and the 6-in. diameter drain or sewer pipe were encountered in the test pit.

SUMMARY AND EVALUATION

A. Exterior Walls

Below Grade: The exterior walls appeared to be bearing on competent granular fill material with no signs of voids below the bearing level. However the composition of the wall at 175 Tremont, rough cut granite with concrete and brick infill, is not monolithic and therefore signs of distress such as cracking would not be readily detected. It is probable, however, that the walls have shifted or subsided to some degree due to loss of infill material. The loss of infill material could result in a redistribution of load along the walls and possibly be the cause of cracking noted in the brick walls above grade. It should be noted that an abandoned sewer line was encountered at the bearing level of the east wall.

Above Outside Grade: The brick exterior walls above the

outside grade are generally in fair condition with minor cracking noted, except for the east wall of 174 and 175 Tremont which showed extensive cracking. The type of cracking and visual inspection indicate differential settlement of the wall at the location of the party wall probably in excess of 2 inches. A vertical crack (approximately 1 in. wide) is visible at the joint between the walls comprising the party wall.

B. Interior and Party Walls

The interior load bearing wall within 175 Tremont is bearing on sound granular fill material as shown in TP-1E. Previous attempts to transfer wall loading via a steel beam were noted at the top of the basement wall near the test pit area. (See Figure 1)

A large void area was encountered beneath the bottom of the load bearing party wall at TP-1E. The voids could have resulted from loss of ground into the abandoned sewer or drain structures. The presence of voids beneath the party wall has probably resulted in settlement of the wall and has compromised the load carrying capacity and structural integrity of the bearing wall. Redistribution of wall loading has probably occurred from the party wall to the interior bearing wall as a result of the settlement. The redistribution of loading may be overstressing the existing footing and bearing soils. The potential for future settlement due to the voids and redistribution of load exists, and therefore must be addressed in any plan to restore the building.

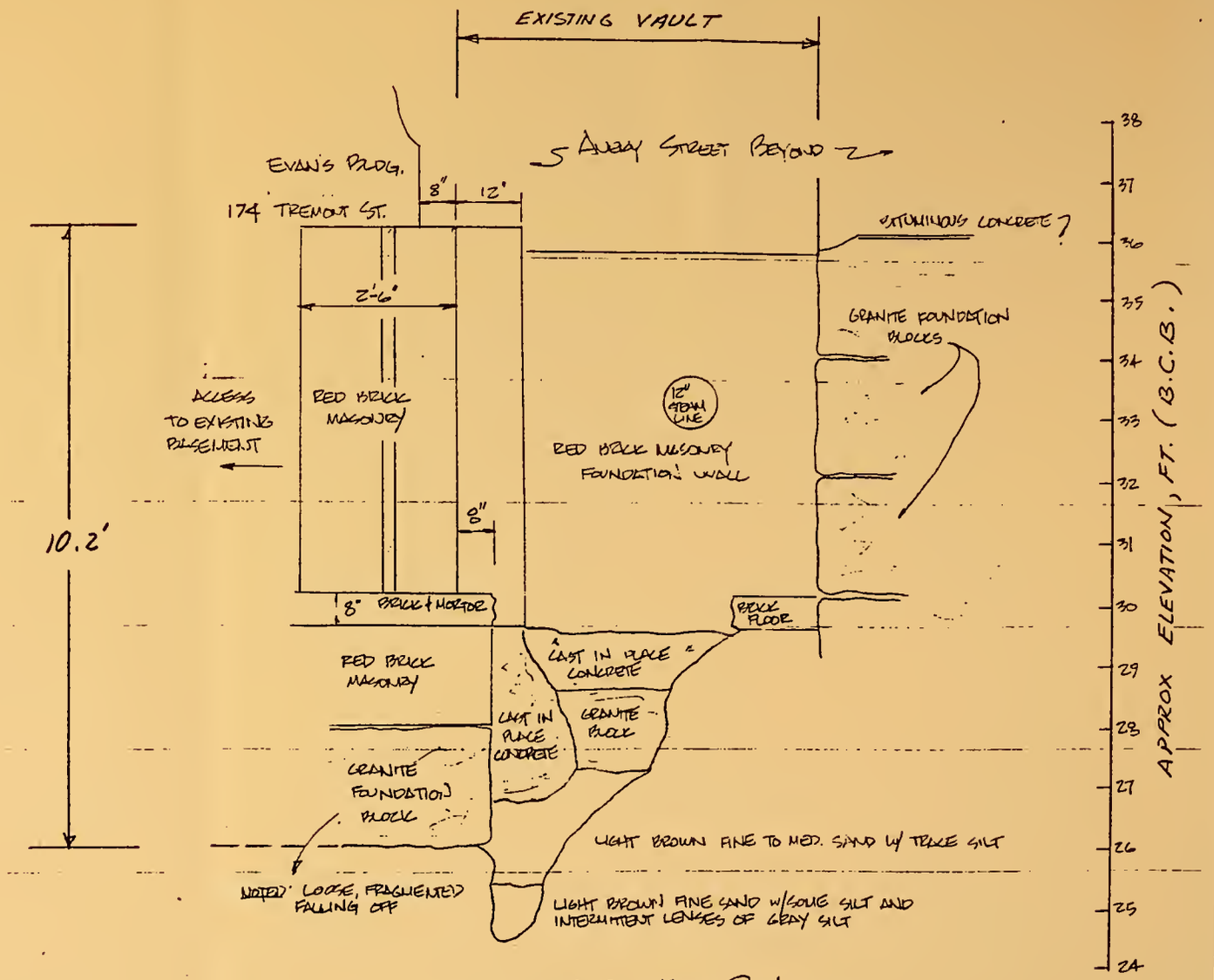
If you have any questions please contact us.

Sincerely yours,
HALEY & ALDRICH, INC.

Keith E. Johnson
Senior Engineer

Edmund G. Johnson
Senior Vice President

c: Mr. Jack Power; F. D. Rich Co. of Boston
Mr. Gordon Hislop; F. D. Rich Co. of Boston



SECTION B-B TEST PIT 1C

SCALE 1"=2'

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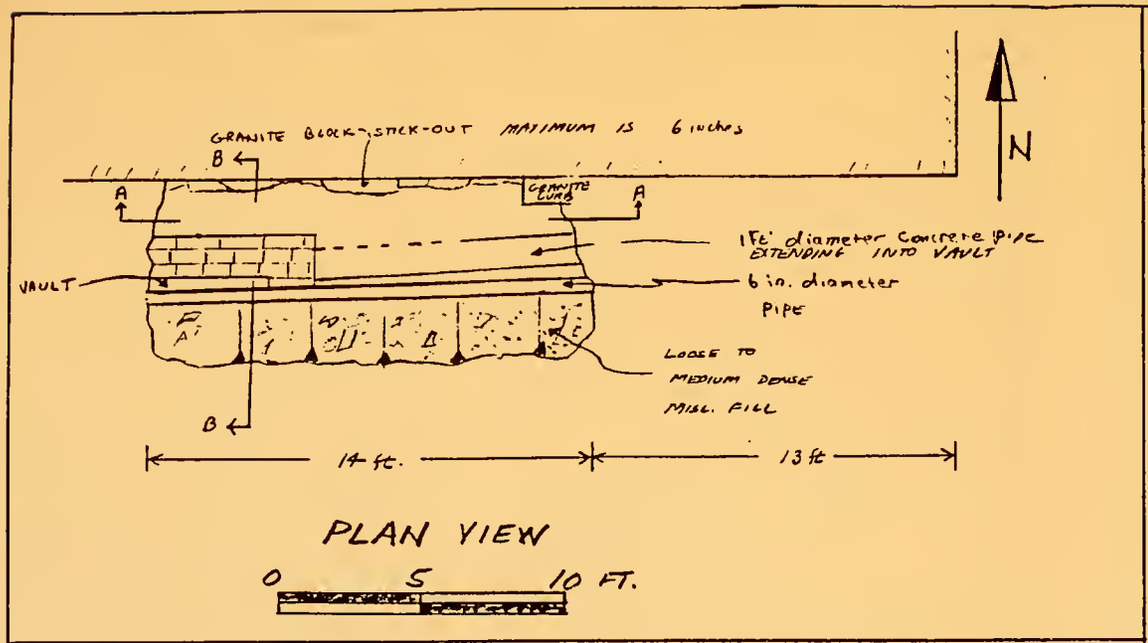
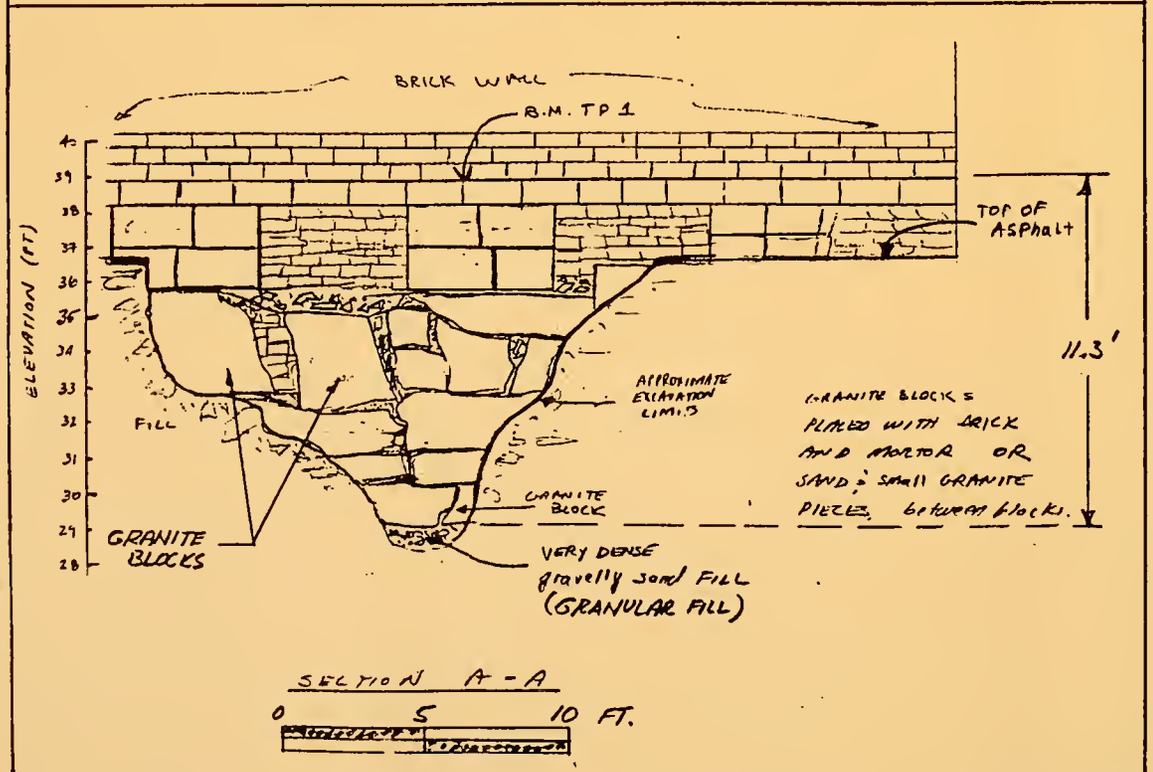
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

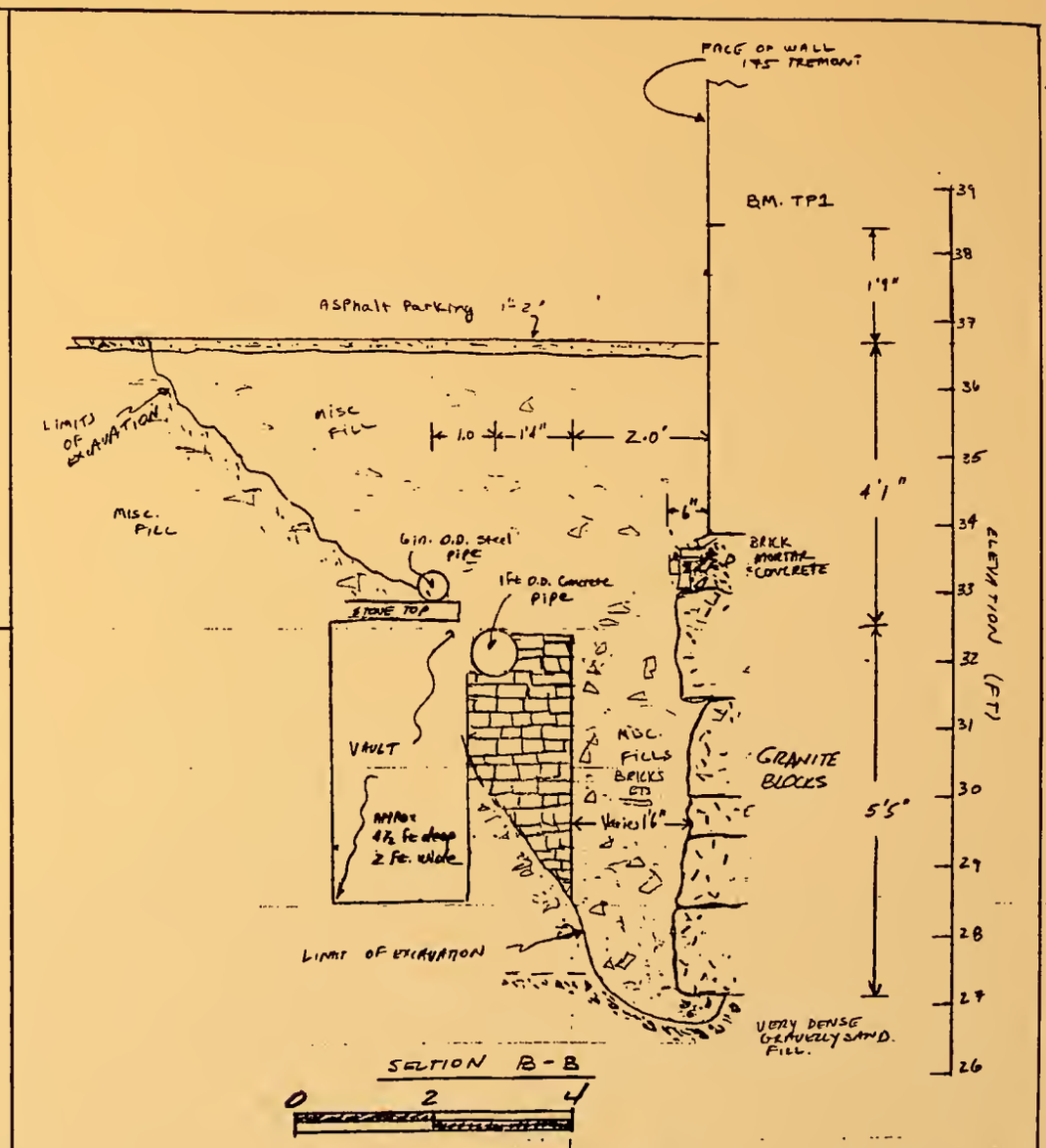
COMMONWEALTH CENTER

TP-1C

AUGUST 1989







Haley & Aldrich, Inc.
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

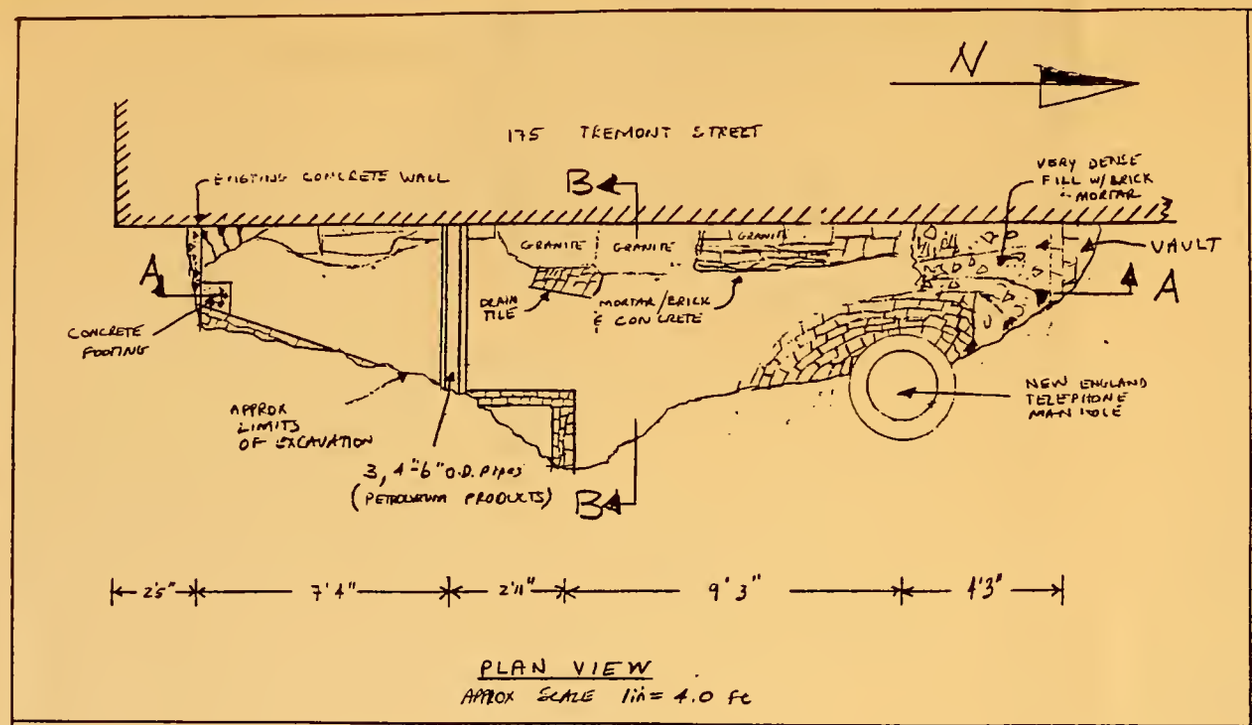
COMMONWEALTH CENTER

TP-1

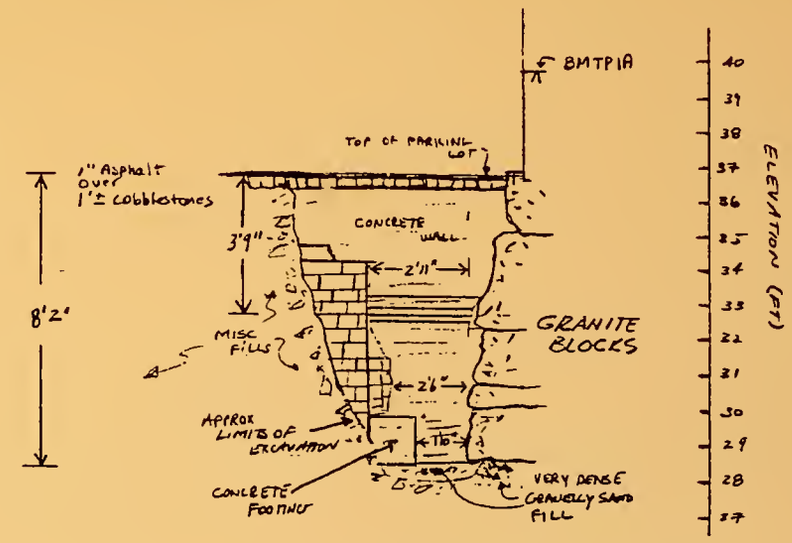
AUGUST 1989

FIGURE 2

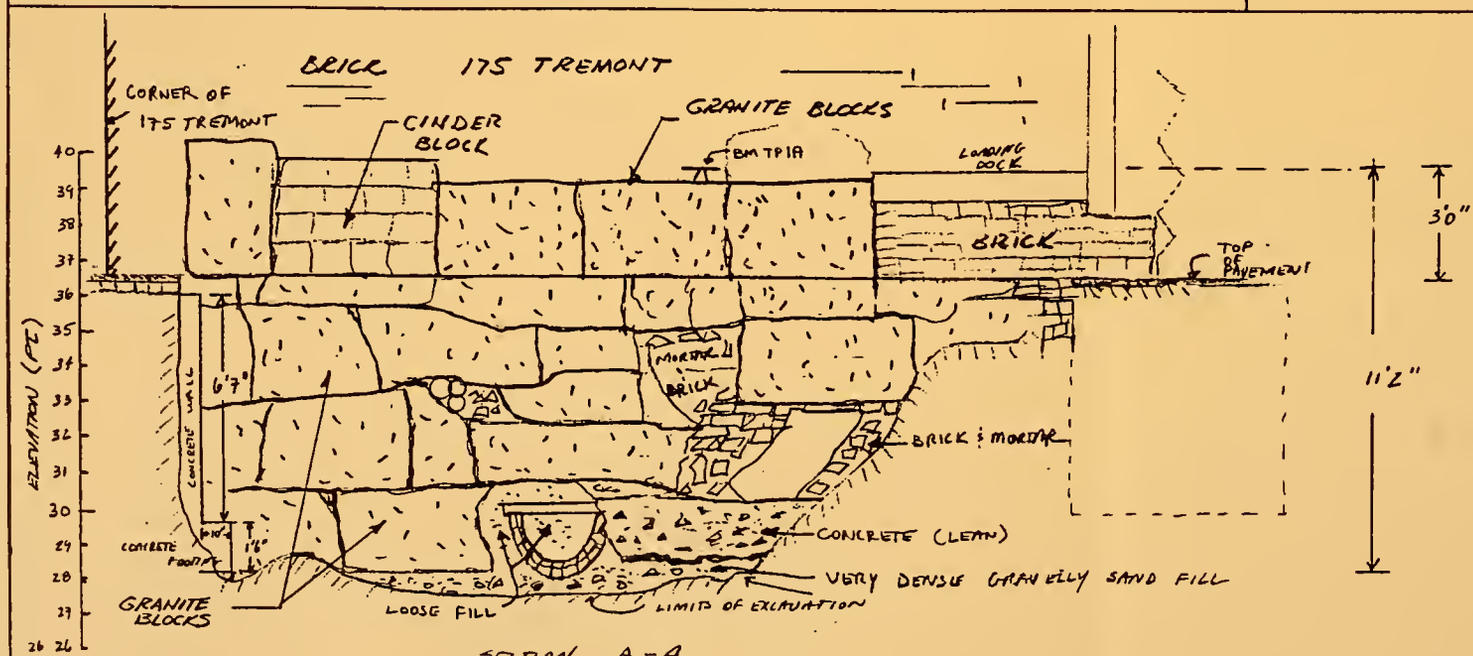
37 16-02



PLAN VIEW
APPROX SCALE 1in = 4.0 ft



SECTION B-B
APPROX SCALE 1in = 4.0 ft



SECTION A-A
APPROX SCALE 1in = 4.0'

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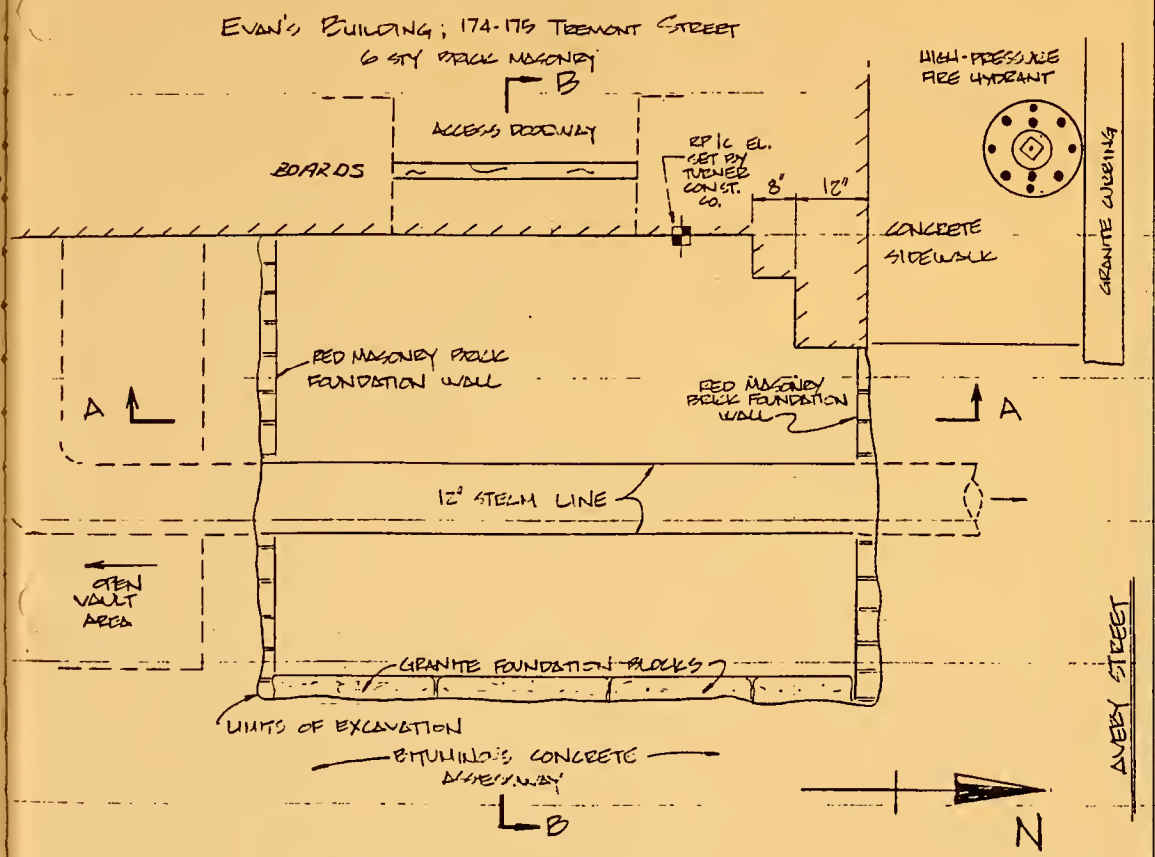
COMMONWEALTH CENTER

TP-1A

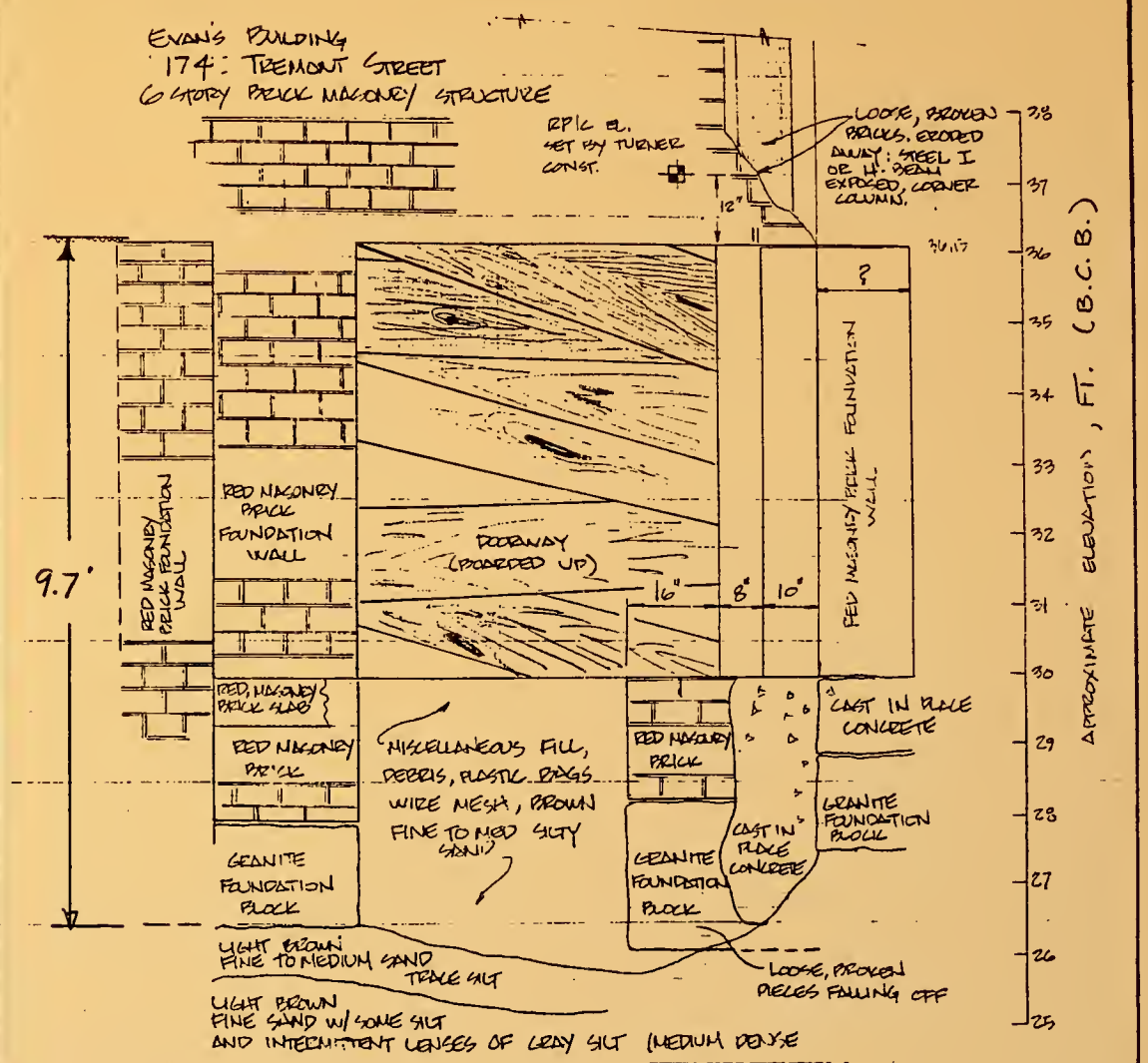
AUGUST 1989

FIGURE 3



PLAN VIEW - TEST PIT 1C

SCALE 1" = 2'



SECTION A-A TEST PIT 1C

SCALE 1" = 2'

0 1 2

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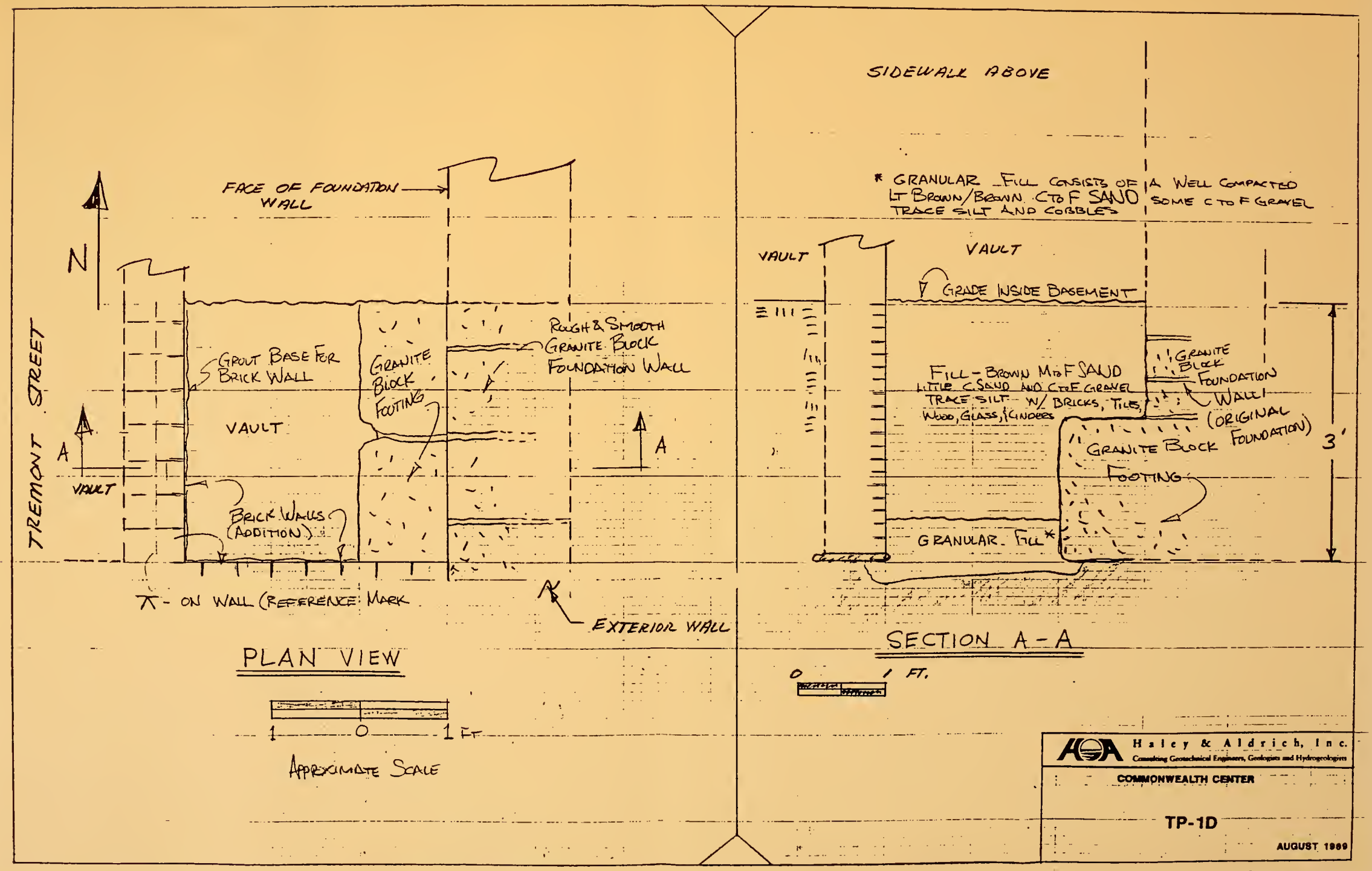
COMMONWEALTH CENTER

TP-1C

AUGUST 1989

FIGURE 4


N
TREMONT STREET
FACE OF FOUNDATION WALL
GROUT BASE FOR BRICK WALL
GRANITE BLOCK FOOTING
ROUGH & SMOOTH GRANITE BLOCK FOUNDATION WALL
VAULT
A
VAULT
BRICK WALLS (ADDITION)
A
- ON WALL (REFERENCE MARK
EXTERIOR WALL
PLAN VIEW
1 0 1 FT
APPROXIMATE SCALE
SIDEWALK ABOVE
* GRANULAR FILL CONSISTS OF A WELL COMPACTED LT BROWN/BROWN C TO F SAND SOME C TO F GRAVEL TRACE SILT AND COBBLES
VAULT
VAULT
GRADE INSIDE BASEMENT
FILL - BROWN M TO F SAND LITTLE C SAND AND C TO F GRAVEL TRACE SILT W/ BRICKS, TILES, WOOD, GLASS, & CINDERS
GRANITE BLOCK FOUNDATION WALL (ORIGINAL FOUNDATION)
GRANITE BLOCK FOOTING
3'
GRANULAR FILL*
SECTION A-A
0 1 FT.
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Consulting Geotechnical Engineers, Geologists and Hydrogeologists
COMMONWEALTH CENTER
TP-1D
AUGUST 1969

FIGURE 5

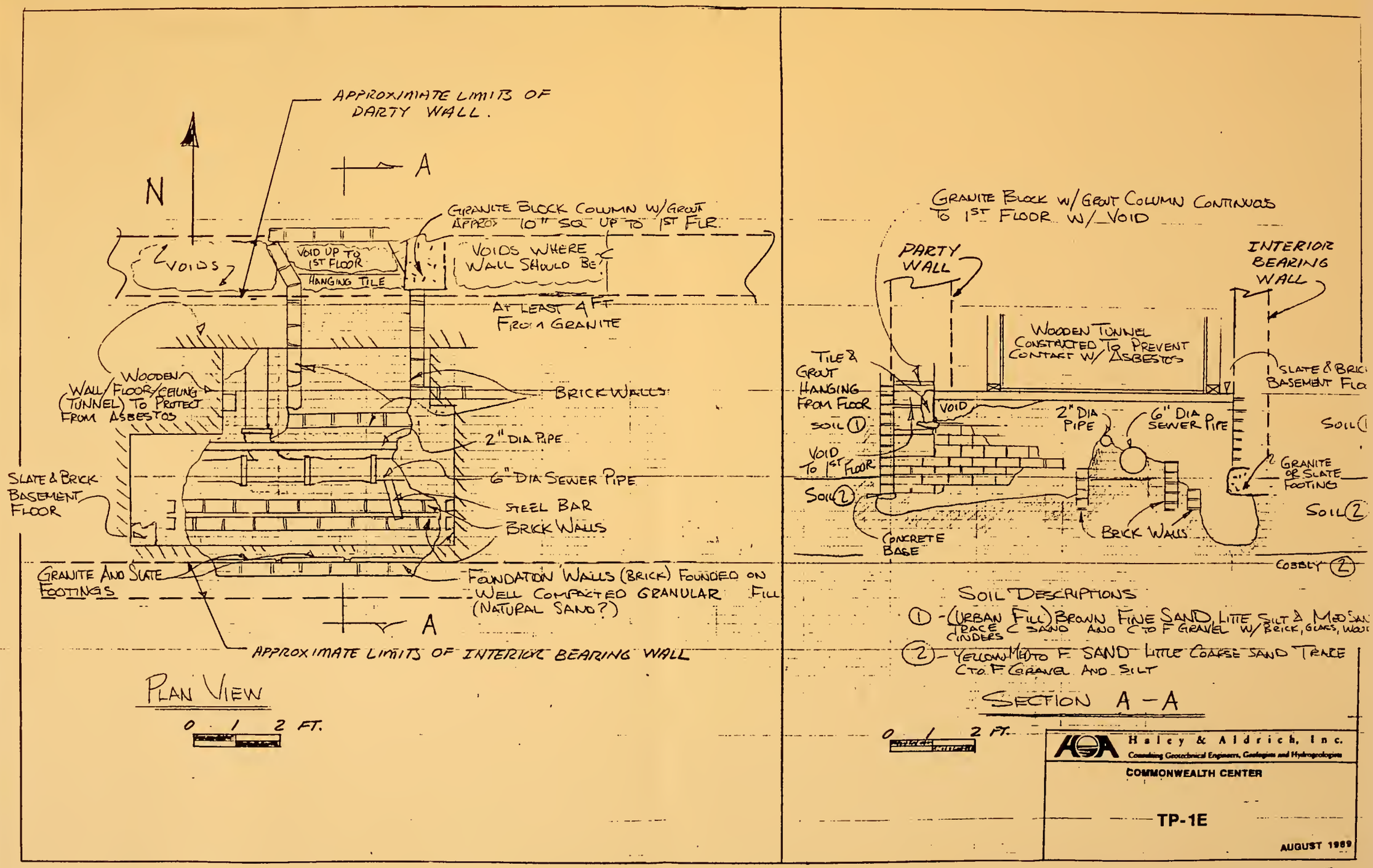

FIGURE 6

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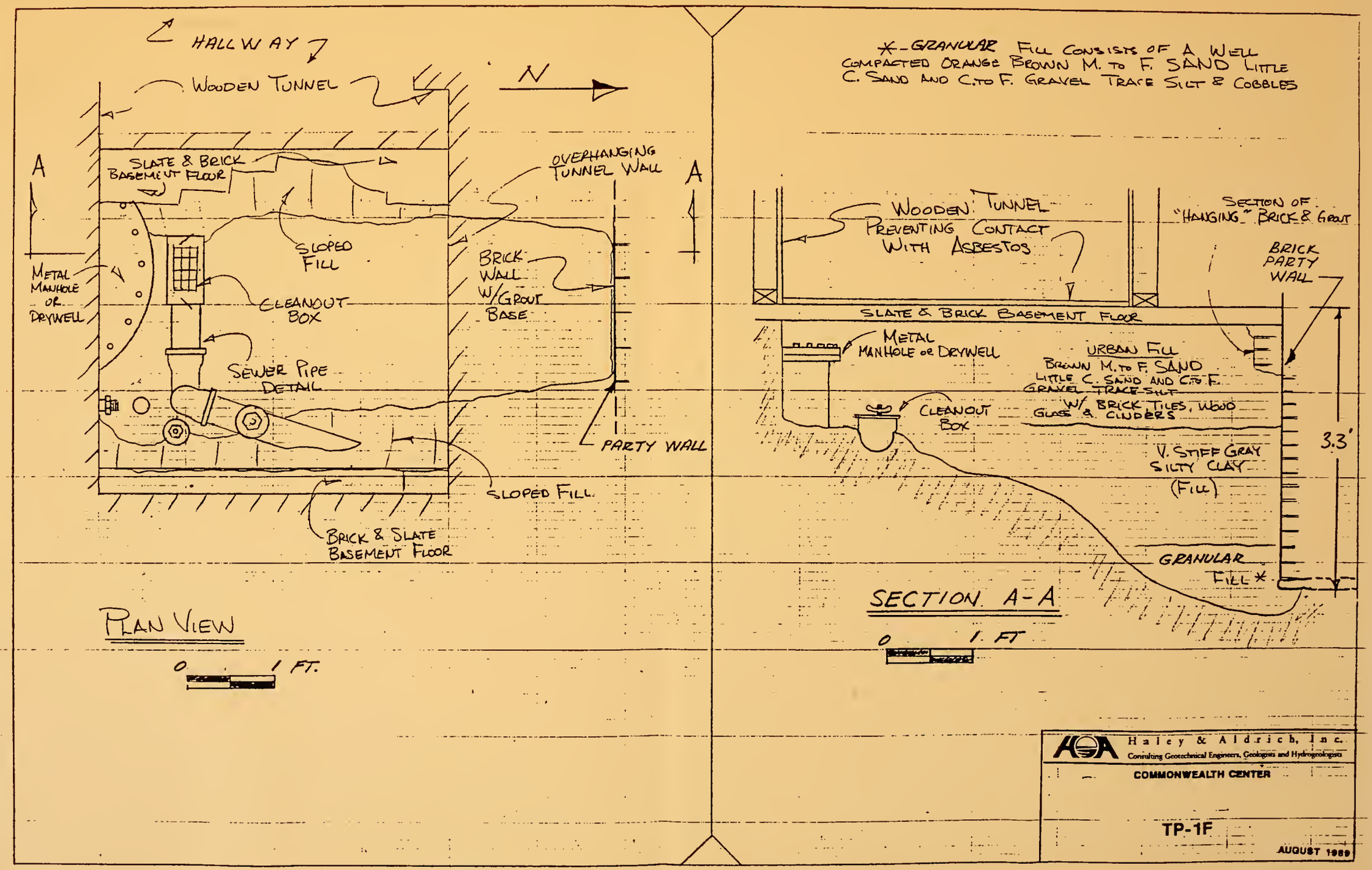

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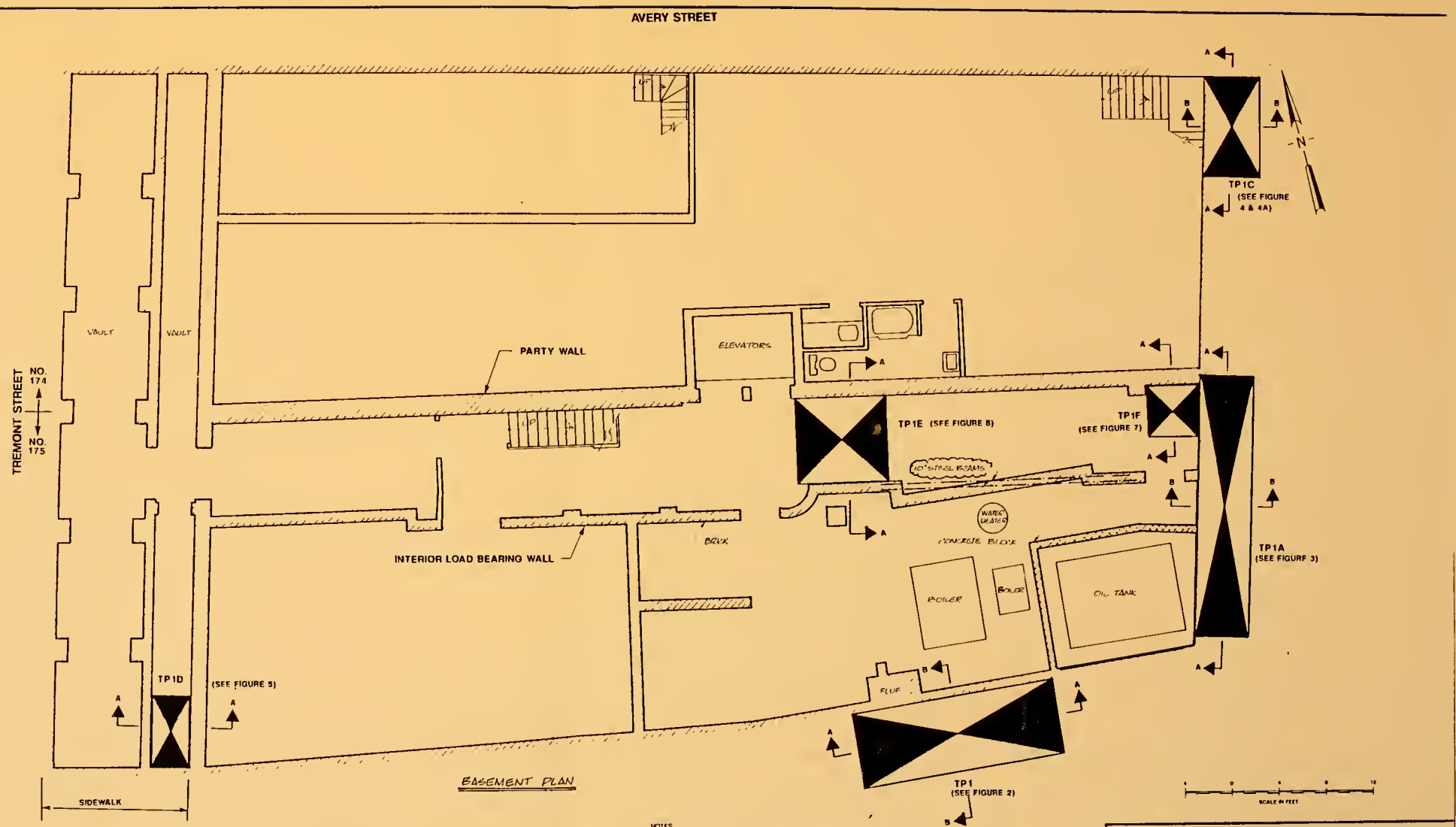
FIGURE 7



BASEMENT PLAN

NOTES

1 FOUNDATION BASE PLAN ADAPTED FROM DRAWING PREPARED BY OEHLEN & ASSOCIATES WASHINGTON D.C. ENTITLED "BASEMENT PLAN SHEET 1 MEASURED DRAWINGS EVANS BUILDING 174 175 TREMONT STREET BOSTON MASSACHUSETTS" DATED 28 SEPTEMBER 1988

2 INTERIOR TEST PITS HAND EXCAVATED BY JEREMIAH SULLIVAN & SONS INC FROM 3 TO 8 AUGUST 1989

3 EXTERIOR TEST PITS EXCAVATED BY JEREMIAH SULLIVAN & SONS INC FROM 4 TO 8 AUGUST 1989 USING A BACKHOE

Haley & Aldrich, Inc.
Consulting Geotechnical Engineers, Geologists and Hydrogeologists

COMMONWEALTH CENTER
BOSTON, MASSACHUSETTS

TEST PIT LOCATION PLAN FOR EVANS BUILDING

SCALE: AS SHOWN

AUGUST 1989
MAY 1989
REV. JULY 1989

FILE NO. 05746-02 D23-S

FIGURE 1

CODE ANALYSIS

The purpose of this report is to determine the effect of building and life safety code requirements relating to existing buildings as set forth in the Massachusetts State Building Code and related codes, laws, and regulations on the Evans House. The pertinent sections of the Massachusetts State Building Code are incorporated in Appendix A.

Two options for the retention of the Evans House are explored herein in terms of code requirements. In Option 1, the exterior and interior bearing walls are retained and restored. Existing floor framing is retained and repaired. In option 2, the Tremont and Avery Stret facades are retained and restored. The remaining walls and the interior of the building are demolished and new floor framing installed.

The only building and life safety code issue related to the facade retention proposed in Option 2 is compliance with the structural provisions of the Code relating to resistance of the retained walls to lateral forces resulting from seismic disturbances and wind pressures. The balance of this report, therefore, deals primarily with code and life safety provisions related to Option 1.

Existing Buildings

Article 22, MSBC was intended to allow the repair, alteration, addition and/or change of use of existing buildings without requiring full compliance with the Code for new construction and, at the same time, providing for public health, safety and general welfare. Appendix T of the Code states as follows: "The provisions of Article 22 and this guideline recognize that the provisions of the Massachusetts State Building Code for new construction reflect the latest improvements in materials, construction techniques, standards of living and safety and, therefore, may preclude the repair, alteration, addition to or change of use of existing buildings that have demonstrated their usefulness and safety." Furthermore, Article 22 notes that there are other state codes, laws and regulations which may modify the effect of the provisions of the article.

Additions to Existing Buildings

The incorporation of the existing building into the proposed project, as in Option 1, with no separation between the existing and new construction, would be considered by the code as if the new construction is an addition to the existing building, combined as one building. Section 2200.3, Item 5 requires such additions to comply fully with the Code requirements for new construction. The combined height and area limitations of the existing building and new construction could not exceed the height and area

limitations of Table 305 and Sections 305.0 and 306.0. These limitations, assuming the existing building would be improved to Type 3B construction and protected throughout with automatic fire suppression system, would permit a maximum building height of five stories or 70 feet above grade. However, if a fire wall is provided between the existing building and the new construction, the new construction can be considered as a separate building. As a separate building, the new construction could have the proposed height if constructed as a Type 2A building in accordance with the requirements of Section 431.0. Therefore, in order to incorporate the Evans House into the proposed new construction it will be necessary to separate the buildings with a fire wall.

Special Use and Occupancy Requirements

Unless separated from the new construction by a fire wall, the existing building must incorporate the Code requirements for high-rise construction set forth in Section 431.0 since the Evans House is over 70 feet in height. The requirements include automatic fire suppression systems throughout, smokeproof enclosure, voice alarm, public address and fire communications systems, central control station, smoke control systems, emergency power supply, fire pump, stairway door unlocking, and emergency communication systems. Again, in order to incorporate the Evans House into the proposed new construction, it is reasonable to assume that the existing and new buildings will be separated by a fire wall.

Egress

In the existing building, primary egress is provided by a single open stair; secondary egress is provided by fire escapes. The code requires that two means of egress be provided from every story, that each tenant have access to two means of egress where floors are divided for more than one tenant, and that all exitways lead directly to the street or to an area of refuge with supplemental means of egress to the street.

In Option 1, the new construction and the existing building will be separated by a fire wall as determined above. Egress from the existing building may be provided either by enclosing the existing stairs and constructing a second enclosed stair within the confines of the Evans House, by the provision of horizontal exits to new exit stairs within the adjacent new construction, or by a combination thereof. Because the existing building has different floor levels than the proposed new construction, the horizontal exits must either be ramped or they may have stairs and an elevator must be provided in the Evans House to comply with handicapped requirements.

Structural Requirements

Since the new construction must comply with all Code requirements for new construction, it must comply with the earthquake provisions of the Code. Treatment of the existing building, however, can occur in two ways. The existing building and the new construction may be constructed to act as an integral unit in resisting horizontal forces and with both in full compliance with the code, or the existing and new construction can be separated by a distance sufficient to avoid contact under deflection by wind or seismic forces. If separated structurally, i.e. on separate foundations with an approximately 4-5" distance separation, the existing building will not need to fully comply with the code. Alterations to the existing building however, may not lessen its resistance to lateral forces.

Repairs and underpinning of the Evans House foundations and repairs to the bearing walls will be necessary, as well as strengthening of the floor framing.

In Option 2, only the exterior walls are retained; they are connected to and supported by the new building. Since they, in fact, become part of the new building, the retained walls would be required to comply with the Code for new construction, and specifically with the requirements for resistance to seismic loads. Several methods of compliance are available including external bracing with through wall anchors, interior bracing with through wall anchors, new interior concrete walls with through wall anchoring to the existing wall, and dismantling and reassembly.

Fire-Resistive Construction Requirements

The separation of the Evans House from the new construction requires a fire wall of not less than 2 hour construction, continuous from the foundation to the roof. It is likely that the existing south and east masonry walls will provide this 2 hour separation. Openings in the fire walls are limited and must be protected as set forth in Section 908.0; all or a portion of the existing windows in the east and south elevation will have to be closed off with 2 hour construction. Unless the roof of the existing building is replaced with 1-1/2 hour fire-resistive construction, the adjacent windows in the new construction will be required to have exterior opening protectives as set forth in Section 914.0.

The floor and interior partition construction will need to be upgraded to meet the fire-resistive rating for Type 3B construction and minimum 2 hour separations will be required between the various proposed uses in the building. It may not be entirely possible to achieve the required ratings by

altering or adding to the current floor and partition construction. Compliance alternatives, such as sprinklering throughout, may be required to comply with the life safety intent of the code.

Summary

If the existing building at 174-175 Tremont Street is renovated and incorporated into the proposed project, it will have to be separated structurally and by a 2 hour fire wall from the new construction; new exit stairs, either in the Evans House or the new construction will be required and most likely, a new elevator will be required within the existing building; and protection of the interior wood and steel framing will be necessary.

If only the Tremont and Avery Street facades are retained and connected to the new construction, alteration will be required to meet the requirements of the Code for new construction, including compliance with seismic, wind load and structural requirements for masonry wall construction.

ALTERNATIVES

Alternatives for the treatment of the Evans House must be addressed on two levels, one dealing with the preservation of the individual materials which make up the building and second dealing with the preservation of the building as a whole. The following text attempts to summarize the alternatives at both levels and identify the impacts of each alternative.

Materials Conservation Alternatives

Sandstone

The alternatives for treatment of the deteriorated sandstone range in philosophical approach from maximum retention of the original material to total replacement. The resulting appearance will be equally as varied. Following are general descriptions of a range of repair scenarios.

Maximum Preservation: Remove old patches and coating materials. Consolidate and re-adhere as much existing stone as possible. Either leave missing stone as is or repair in place, over the consolidated stone, using polymer modified mortar, colored to match the sandstone and modeled to match the original profiles and details. This procedure will have the following results:

Will preserve the maximum quantity of the original stone although some damage to the stone will be required to provide key for the repair material.

Final appearance of the restoration is heavily dependent upon the skill of the masons.

Life expectancy of repairs is uncertain, generally considered short term repair with continued maintenance required.

Partial Preservation: Remove old patches, coating material and all loose stone. Consolidate remaining sound stone and repair in place, over consolidated stone, using polymer modified mortar to match the color of the sandstone and modeled to match the original profiles and details. This procedure will have the following results:

Will preserve a large amount of the original stone.

Close to 100% of the exposed face will be repair material.

Final appearance of the restoration is heavily dependent upon the skill of the masons.
Life expectancy of the repairs is uncertain, generally considered short term repair with continued maintenance.

Partial Preservation: Remove old patches, coating material and the most seriously delaminated and spalled stone pieces. Consolidate the remaining stone, replace the removed stone with new cast stone and repair the lesser damaged stone with modified mortar to match the original color and detailing.

Will replace more than half of the original stone with new cast stone.

Will provide greater control over the final appearance, as the quality of the fabrication and installation of the cast stone can be more easily controlled.

High quality cast stone has a longer expected life than mortar repair.

Replacement: Remove all damaged stone pieces, consolidate remaining original stone and replace damaged stone with new cast stone to match the original color and detailing.

Approximately 90% of the facade will be new cast stone.

Will offer maximum control over the final appearance of the stone.

Will facilitate upgrade of the facade to comply with seismic codes if necessary.

High quality cast stone and consolidated sandstone have a longer expected life than mortar repairs.

Rebuild: Remove all of the sandstone and rebuild the facade with new cast stone or imported natural stone to replicate the original confiuration of the upper floor sandstone.

No original material will be preserved.

The final appearance will be that of the original stone when newly erected.

Long term stability with minimum maintenence.

Will allow upgrade of the wall to meet seismic code if necessary.

New Construction: Replace the facade with new construction which reproduces the scale and image of the Evans House, but does not replicate the detailing or materials.

Brick and Limestone

As the damage to the brick and limestone is much more limited, treatment of the deterioration is also limited:

Repair: Remove and replace the steel lintels and install flashing (will require the removal of the wood window frames and sash), replace the broken brick and relay the shifted brick. Point the cracks in the limestone sills.

Replacement: Repair the brick as above, replace the damaged stone sills.

Sheet Metal Roofing

The existing copper and ferrous sheet metal roofing at the west mansard and at the roof coping is in poor condition and is not original. Alternatives for treatment are as follows:

Repair: Remove damaged sections of the copper and ferrous metal and replace with new copper. Repair open joints and small holes as necessary. This treatment will retain non-original material, may not be possible depending upon how brittle the existing copper is and can be considered short term with high maintenance.

Replace with Copper: Remove all existing sheet metal at the roof and replace with all new copper. This action will replicate the post 1914 appearance of the roof, and will provide a new roof with low maintenance.

Replace with Slate: Remove all of the existing sheet metal roof and replace with slate and copper roof. This action will replicate the 1859 to 1914 appearance of the roof of the building and provide a new roof with low maintenance.

Cast Iron and Sheet Metal Storefront

The existing cast iron and sheet metal storefront material is in good condition and can be treated as follows:

Repair: Remove the modern storefronts at the ground floor and repair the existing cast iron and sheet metal. Replace missing elements at the first floor to match the second floor or as based upon additional evidence under the modern storefronts. This action will restore the appearance of the lower to floor to its post 1925 configuration.

Repair and Replace: Remove the post 1925 alterations to the existing storefronts and restore the storefronts at the lower floors of the building based upon photographic documentation. This action will replicate the 1870's to 1925 appearance of the ground and second floors.

Replace: Remove all of the cast iron and sheet metal storefront materials and replace with cast stone to match the original 1859-1869 configuration of the ground and second floors based upon photographic documentation. To restore accurately to the 1859-69 period of the building, removal of the north elevation window and storefront openings and restoration of the north facade to a party wall configuration will be necessary.

Wood Windows

The wood windows of the west and north elevations vary widely in their condition from elelvation to elevation and window to window. The general levels of treatment which can be considered are as follows:

Repair: Repair the existing wood, consolidate or replace damaged wood with new wood, replace missing elements with new wood, install new glass, glazing putty, sealants and weatherstripping. Seal the windows and install new interior storm/sound attenuation windows. This action will retain the maximum quantity of the existing wood and will require maintenance painting on a 3-5 year cycle.

Replace with Wood: Replace all of the existing wood windows with new wood windows fabricated to match the exterior appearance of the original windows. New windows can be fabricated with single glazing and interior storm windows or with an insulated glazing system. This alternative will replicate the original appearance of the windows and will require maintenance painting on a 3-5 year cycle.

Replace with Aluminum: Replace the wood windows with new aluminum windows fabricated to replicate the original exterior configuration of the wood windows. New aluminum windows can be fabricated with insulated glazing system and high performance coatings which will require no maintenence for 20 years.

Project Alternatives

Option 1

Description: Retain the exterior and interior masonry walls, interior floor and roof framing.

Scope of Work: Underpin and repair the existing foundations and separate the foundations from the new construction.

Strengthen the interior floor framing to meet minimum loading requirements.

Reconfigure the interior for the proposed use as hotel rooms on the upper floors and restaurant and bar on the ground and second floors.

Upgrade the construction throughout to meet the fire-resistance ratings for Type 3B construction where possible and investigate acceptable compliance alternatives. Provide 2 hour separation between proposed uses.

Install new interior exit stairs and elevator and/or provide horizontal egress to the adjacent new construction.

Install all new mechanical, electrical and plumbing systems throughout.

Separate the Evans House from the new construction to meet seismic code requirements.

Restore the exterior of the building.

Impacts on Proposed Project:

Loss of parking and useable space below Evans House.

Basement of Evans House not occupiable space.

Some combination of new stairs, elevator or ramped horizontal exits required in new and existing building.

Opening protectives required at the adjacent new construction.

New construction must be separated from the existing by fire wall.

New construction must be separated from existing by open space.

Option 2

Description: Retain and restore the west and north elevations of the Evans House. Demolish the remainder of the existing building and construct new floor and roof framing.

Scope of Work: Support the north and west facades in place during construction. Provide new foundations.

Construct new floor and roof framing at adjusted floor levels to more closely align with the new construction.

Install new interior stairs and elevator and/or provide horizontal egress to the adjacent new construction.

Provide 2 hour separation between proposed uses.

Install all new mechanical, electrical and plumbing systems throughout.

Restore the retained facades, replicate the original roof configuration at the north and west.

Modify the retained facades to comply with new construction code requirements and/or request variance for structural and seismic codes.

Impacts on Proposed Project:

Parking and useable space gained below Evans House.

Some combination of new stairs, elevator or ramped horizontal exits required because of varying floor levels.

Retained facades must be modified to meet structural and seismic code. Alternatives include external bracing, internal bracing, new interior concrete wall, or dismantling and reconstruction.

Option 3

Description: Demolish all of the existing construction and replace with a new building.

Scope of Work: Design sensitive new infill building which reproduces the general scale and image of the Evans House.

Impacts on the Proposed Project:

Construct an integrated building with a presence on the Common.

New design can provide attactive facades on both Avery and Tremont.

Impacts on the Historic District:

Loss of a contributing building.

Gain of a sensitively scaled building consistent with the 20th century context of the district, but with late 20th century design vocabulary and detailing which relates to the Common and Avery Street. Construction of a late 20th century design building at this location would not be unlike the precendent set by the Evans House in 1859 - a departure from the established design of the street, using the materials and styling of the period.

780 CMR: MASSACHUSETTS STATE BUILDING CODE

4TH EDITION, 1980, AS REVISED

ARTICLE 22

REPAIR, ALTERATION, ADDITION AND CHANGE OF USE OF EXISTING BUILDINGS

SECTION 2200.0 SCOPE

2200.2 Compliance: Repairs, alterations, additions, and changes of use shall conform to the requirements of this article. Where compliance with the provisions of this code for new construction, required by this article, is impractical because of structural or construction difficulties or regulatory conflicts, compliance alternatives as described in Section 2206.0 may be accepted by the building official.

Note: Specialized codes, rules, regulations and laws pertaining to repair, alteration, additions and change of use of existing buildings promulgated by various authorized agencies may impact upon the provisions of this article. Specialized state codes, rules, regulations and laws include, but are not limited to those listed in Appendix P.

2200.3 Applicability: The provisions of this article apply to repair, alteration and/or addition to existing buildings which qualify to use this article (see Section 2200.3.1), based on the proposed continuation of or change in use group, as follows:

5. Additions: Additions to existing buildings shall comply with all code requirements for new construction. The combined height and area of the existing building and new addition shall not exceed that allowed by Table 305 and Sections 305.0 and 306.0. Where a fire wall complying with Section 907.0 is provided, the addition may be considered as a separate building. No addition shall impose loads which would cause the existing building to be subject to stresses exceeding those permitted by the code for new construction.

ARTICLE 3

GENERAL BUILDING LIMITATIONS

SECTION 305.0 GENERAL AREA AND HEIGHT LIMITATIONS

Section 305.1 General: The areas and heights of all buildings and structures between exterior walls, or between exterior walls and fire walls, shall be governed by the type of construction and the use group classification as defined in Article 2 and shall not exceed the limits fixed in Table 305, except as these may be specifically modified by other provisions of this article and Article 4.

Section 305.4 Multi-story buildings: Buildings two (2) stories in height may be built to the same area limits provided in Table 305 for one (1) story buildings. In buildings over two (2) stories in height, the area limits of Table 305 for one (1) story buildings shall be reduced as specified in the following Table 305.4.

TABLE 305 (EXCERPTS)

HEIGHT AND AREA LIMITATIONS OF BUILDINGS

Use Group	Type 3B	Type 3C
B Business	4 stories, 50 ft., 19,800 S.F.	3 stories, 40 ft., 14,400 S.F.
R-1 Hotel	4 stories, 50 ft., 13,200 S.F.	3 stories, 40 ft., 9,200 S.F.

TABLE 305.4 (EXCERPTS)

PERCENT REDUCTION OF AREA LIMITS

No. of Stories	Type 3B, 3C
5	30%

SECTION 306.0 AREA EXCEPTIONS

306.2 Street frontage increase: When a building or structure has more than twenty-five (25) percent of the building perimeter fronting on a street or other unoccupied space not less than thirty (30) feet in width accessible from a street by a posted fire lane not less than eighteen (18) feet in width, the tabular areas may be increased two (2) percent for each one (1)percent of such excess frontage.

306.3 Automatic fire suppression system: When a building of other than high hazard (Use Group H) use is equipped with an approved automatic fire suppression system, the tabular areas may be increased by two hundred (200) percent for one (1) story buildings and one hundred (100) percent for buildings more than one (1) story in height.

SECTION 308.0 HEIGHT EXCEPTIONS

308.1 Automatic fire suppression systems: When a building of other than high hazard (Use Group H) use is equipped with an approved automatic fire suppression system, the building may be erected one (1) story or twenty (20) feet higher than specified in Table 305.

ARTICLE 4

SPECIAL USE AND OCCUPANCY REQUIREMENTS

SECTION 431.0 HIGH-RISE BUILDINGS

Section 431.1 Applicability: The provisions of this section shall apply to all buildings more than seventy (70) feet above mean grade.

Section 431.3 General: All high-rise buildings complying with Section 431.1 shall be provided with an approved automatic fire suppression system.

Section 431.3.1 Automatic fire suppression system: The automatic fire suppression system shall be installed throughout the building. The system shall be designed using the parameters set forth in the applicable standards listed in Appendix I, and shutoff valves and a water flow device shall be provided for each floor.

Exception: In Use Groups R-1 and R-2, sprinklers may be omitted in closets and similar spaces which are located within an individual dwelling unit when the least dimension of such spaces is not greater than thirty (30) inches and the floor area within such spaces does not exceed twenty-four (24) square feet.

Section 431.5 Alarm and communication systems: Alarm and communication systems shall be provided. The alarm and communication systems shall be so designed and installed that damage to any terminal unit or speaker will not render more than one (1) zone of the system inoperative.

A single communication system may be designed to serve the voice alarm, public address and fire department communication system as follows:

1. Voice alarm system: The operation of any smoke detection, sprinkler waterflow device or manual fire alarm station shall automatically activate a voice alarm system. Activation of the system shall automatically sound an alert signal to the desired areas. The voice alarm system shall provide a predetermined message on a selective basis to the area where the alarm originated and shall provide information and give direction to the occupants. The alarm shall be designed to be heard clearly by all occupants within the building or designated portions thereof as is required for the public address system.

   The central control station shall contain controls for the voice alarm system so that a selective or general voice alarm may be manually initiated.

The system shall be continuously electrically supervised against component failure of the audiopath including amplifiers, speaker wiring, switches and electrical contacts and shall detect opens, shorts and grounds which might impair the function of the system.

2. Public address system: A public address communication system designed to be clearly heard by all occupants of the building shall operate from the central control station. It shall be established on a selective or general basis to the following terminal areas:

   a. elevators,

   b. elevator lobbies,

   c. corridors,

   d. exitway stairways,

   e. rooms and tenant spaces exceeding one thousand (1,000) square feet in area,

   f. dwelling units in apartment houses, and

   g. hotel guest rooms or suites.

3. Fire department communication system: A two (2) way fire department communication system shall be provided for fire department use. It shall operate between the central control station and every elevator, elevator lobby and entry to every enclosed exitway stairway.

Section 431.6 Central control station: A central control station for fire department operations shall be provided in a location approved by the fire department. It shall contain:

1. the voice alarm and public address system panels;
2. the fire department communications panel;
3. fire detection and alarm system annunciator panels;
4. status indicator for elevators;
5. status indicators and controls for air handling systems;
6. controls for unlocking all stairway doors simultaneously;
7. sprinkler valve and waterflow detector display panels;
8. emergency power, light and emergency system controls and status indicators; and
9. a telephone for fire department use with controlled access to the public telephone system.

Section 431.7 Smoke control: Natural or mechanical ventilation for the removal of products of combustion shall be provided in every story and shall consist of one (1) of the following:

1. Panels or windows in the exterior walls which can be opened remotely from an approved location other than the fire floor. Such venting facilities shall be provided at the rate of twenty (20) square feet per fifty (50) lineal feet of exterior wall in each story and shall be distributed around the perimeter at not more than fifty (50) foot intervals. Such windows or panels and their controls shall be clearly identified.
2. When a complete and approved automatic fire suppression system is installed, the mechanical air handling equipment may be designed to accomplish smoke removal. Under fire conditions, the return and exhaust air shall be moved directly to the outside without recirculation to other sections of the building. The air handling system shall provide a minimum of one (1) exhaust air change each ten (10) minutes for the area involved.
3. A continuous shaft through which smoke and heat can be mechanically vented to the outdoors. The size of the shaft shall be uniform throughout and of such dimension as to produce one (1) air change per ten (10) minutes in the largest compartments served anywhere in the building. Openings into the shaft shall be protected with an automatic single-piece shutter located as high in the room as possible and designed to vent the entire compartment.
4. Any other approved design which will produce equivalent results.

Section 431.9 Emergency power, light and emergency systems: Emergency power, light and emergency systems shall comply with the following:

1. Emergency power: A permanently installed on-site power generation system shall be provided. All power, lighting, signal and communication facilities provided under the requirements of this section, including an independent ventilation system for the emergency power generator room, shall be transferable to the emergency power source.

   The electrical power requirements for sizing the emergency power generation systems shall include but not be limited to the following:

   a. fire protection equipment, including fire pumps;

   b. mechanical ventilation equipment required by this section including power operated windows;

   c. elevator cars required by 524 CMR 15.00-33.00;

   d. emergency lighting; and

   e. the normal loads of all facilities classed as emergency. The regular light and power circuits supplying such facilities are classified as emergency systems and be automatically transferable to the emergency power generation system.

2. Emergency lighting: Emergency lighting shall include but not be limited to the following:

   a. separate lighting circuits and facilities sufficient to provide light with an intensity not less than one (1) foot candle measured at floor level in all exitway access corridors, stairways, smokeproof enclosures, elevators, elevator lobbies, and other areas which are clearly part of the means of egress; and

   b. all circuits supplying lighting for the central control station, the emergency power generator rooms, and other rooms housing control equipment for mechanical systems required by this section shall be transferable to the emergency power system.

3. Emergency systems: All electrical systems and facilities required by this section and classified as emergency shall be installed in an approved manner. The following systems and lighting loads are classified as emergency facilities and shall operate within ten (10) seconds of primary power failure:

   a. required lighted exit signs and exit pathway illumination,

   b. fire alarm and sprinkler alarm systems,

c. fire detection systems,

d. elevator car lighting,

e. stairway door control systems, and

f. voice communication systems.

Section 431.10 Exits: Exits shall comply with other requirements of this code and the following:

1. All stairway doors which are to be locked from the stairway side shall have the capability of being unlocked simultaneously without unlatching upon a signal from the central control station.

2. A telephone or other two-way communications system connected to an approved emergency service which operates continuously shall be provided at not less than every fifth (5) floor in each required stairway where other provisions of this code permit the doors to be locked.

ARTICLE 6

MEANS OF EGRESS

SECTION 602.0 USE AND OCCUPANCY REQUIREMENTS

Section 602.3 Multiple tenants: When more than one (1) tenant occupies any one (1) floor of a building or structure, each tenant shall be provided with direct access to approved exitways.

SECTION 607.0 TYPES AND LOCATIONS OF EXITWAYS

Section 607.1 General: All approved exitways, including doorways, passageways, corridors, interior stairways, exterior stairways, moving stairways, smokeproof enclosures, ramps, horizontal exits, bridges, balconies, fire escapes and combinations thereof shall be arranged and constructed as provided in this code.

607.2 Arrangement: All required exitways shall be so located as to be discernible and accessible with unobstructed access thereto and so arranged as to lead directly to the street or to an area of refuge with supplemental means of egress that will not be obstructed or impaired by fire, smoke or other cause.

607.3 Remote location: Whenever more than one (1) exitway is required from any room, space or floor of a building, they shall be placed as remote from each other as practicable, and shall be arranged to provide direct access in separate directions from any point in the area served.

Section 607.4 Length of travel: Except as modified by provisions of Section 609.3 for buildings with one (1) exitway, all exitways shall be so located that the maximum length of exitway access travel, measured from the most remote point to an approved exitway along the natural and unobstructed line of travel shall not exceed the distances given in Table 607; except where the area is subdivided into rooms or compartments, and the egress travel in the room or compartment is not greater than fifty (50) feet [one hundred (100) feet in use groups equipped with an automatic fire suppression system], the distance shall be measured from the exitway access entrance to the nearest exitway.

TABLE 607 (EXCERPTS)

LENGTH OF EXITWAY ACCESS TRAVEL (FT.)

Use Group	With Fire Suppression System
B	300
R-1	150

SECTION 609.0 NUMBER OF EXITWAYS

Section 609.2 Minimum number: There shall be not less than two (2) approved independent exitways serving every building except as modified in Section 609.3. There shall be not less than two (2) approved independent exitways serving every story, except in one and two-family dwellings and as modified in Section 609.3.

Section 2203.7 Number of exits: Any existing building shall provide at least two (2) means of egress serving every story which are acceptable to the building official.

Exception: One- and two-family dwellings and buildings as modified in Sections 417.0, 418.0 (places of assembly), or 609.3 (two-story business buildings).

Section 2203.8 Capacity of exits: All required means of egress shall comply with Section 608.0. Existing means of egress may be used to contribute to the total egress capacity requirement based on the unit egress widths of Section 608.0.

SECTION 614.0 HORIZONTAL EXITS

Section 614.2 Separation: The separation between fire areas shall be provided by at least a two (2) hour fireresistance rated fire wall or fire separation wall complying with Article 9 and Table 214.

Section 614.3 Size of doors: Size of openings in fire walls shall comply with the provisions of Section 908.0, but the width of one (1) opening used as a required exit shall not be greater than eighty-eight (88) inches nor shall the area exceed eighty (80) square feet.

Section 614.6 Egress from area of refuge.

Section 614.6.1 Stairway exitway: In multi-story buildings, there shall be at least one (1) interior enclosed stairway or smokeproof enclosure on each side of the

horizontal exit, and any fire area not having a stairway accessible thereto shall be considered as part of an adjoining section with such stairway; but the length of exitway access travel distance to the horizontal exit or the required exitway shall not exceed the requirements of Section 607.4.

SECTION 615.0 EGRESS RAMPS

Section 615.2 Minimum dimensions.

Section 615.2.1 Width: The minimum width of an egress ramp shall be not less than that required for corridors by Section 610.3.

Section 615.3 Landings: Landings shall be provided at all points of turning, entrance, exiting and doors. Ramp slopes greater than one (1) in fifteen (15) shall have landings at the top, bottom and each five (5) feet of vertical rise. Each landing shall have a minimum length of five (5) feet except the bottom landing shall have a length of six (6) feet.

Section 615.4 Maximum slope: A ramp used for egress for the physically handicapped shall have a maximum slope of one (1) in twelve (12). All other egress ramps shall have a maximum slope of one (1) in eight (8).

SECTION 201.0 GENERAL DEFINITIONS

Stairway: One (1) or more flights of stairs, and the necessary landings and platforms connecting them, to form a continuous and uninterrupted passage from one floor to another. A flight of stairs, for the purposes of this code, must have at least three (3) risers.

SECTION 616.0 INTERIOR EXITWAY STAIRWAYS

Section 616.9.2 Enclosures: Required interior exitway stairways shall be enclosed in fire separation assemblies of the fireresistance rating specified in Table 214. An exitway enclosure shall not be used for any purpose other than means of egress. A space below a stairway shall be enclosed as required or kept open. Doors shall not open into the stairway enclosure except exitway doors.

Exceptions:

1. Exitways in buildings of Use Groups R-3 and R-4 (residential, one- and two-family).
2. Exitways serving and contained within a single residential dwelling unit.
3. Exitways in communicating floor levels as provided in Section 616.10.
4. Supplemental stairways as provided in Section 616.8.

ARTICLE 7

STRUCTURAL AND FOUNDATIONS LOADS AND STRESSES

SECTION 705.0 EXISTING BUILDINGS

Section 705.2 Building extended: When an existing building is altered by an extension in height or area, all existing structural parts affected by the addition shall be strengthened where necessary, and all new structural parts shall be designed to meet the requirements for buildings hereafter erected.

SECTION 716.0 EARTHQUAKE LOAD

Section 716.6.3 Building separations: All portions of structures shall be designed and constructed to act as an integral unit in resisting horizontal forces unless separated structurally by a distance sufficient to avoid contact under deflection from seismic action or wind forces.

Section 716.6.7 Minor alterations: Minor structural alterations may be made in existing buildings and structures, but the resistance to lateral forces shall be not less than that before such alterations were made, unless the building as altered meets the requirements of this section of the code.

ARTICLE 9

FIRERESISTIVE CONSTRUCTION REQUIREMENTS

SECTION 907.0 FIRE WALLS AND PARTY WALLS

Section 907.1 General: Walls shall have sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall and shall be constructed of any approved noncombustible materials providing the required strength and fireresistance rating specified in Table 214 for the type of construction, but not less than the fire grading of the use group specified in Table 902. The construction shall comply with all the structural provisions for bearing or non-bearing walls of this code.

Section 907.7 Continuity of walls: In all buildings and structures, walls shall be continuous from foundation to two (2) feet eight (8) inches above the roof surface, except for the following:

1. The wall may terminate at the underside of the roof deck where the roof is of noncombustible construction and is properly firestopped at the wall.
2. The wall may terminate at the underside of the roof deck in Types 3 and 4 construction if properly firestopped, and the roof sheathing or deck is constructed of approved noncombustible materials for a distance of four (4) feet on either side of the wall and combustible material does not extend through or over the wall.

SECTION 908.0 FIRE WALL OPENINGS

Section 908.3 Opening protectives: Every opening in a fire wall shall be protected on both sides with an approved automatic protective assembly as herein required, or the approved labeled equivalent, except horizontal exit openings.

Section 908.3.1 Hold-open devices: Heat-actuated hold-open devices used on an automatic fire assembly providing three (3) hour fireresistance rating shall be installed, one (1) on each side of the wall at ceiling height where the ceiling is more than three (3) feet above the opening. Fire assemblies protecting openings required to have one and one-half (1-1/2), one (1) or three-fourths (3/4) hour fireresistance rating, and which are not exitway doors, may be activated in a similar manner, or by a single fusible link incorporated in the closing device. Doors opening in a means of egress shall be closed by actuation of a smoke detector conforming to the standards listed in Appendix I.

SECTION 914.0 EXTERIOR OPENING PROTECTIVES

Section 914.1 Where required: Where specified herein, the exterior openings of all buildings and structures other than churches (Use Group A-4), residential buildings (Use Groups R-2, R-3 and R-4), buildings of unprotected noncombustible (Type 2C) construction, and buildings of frame (Type 4) construction shall have approved opening protectives meeting the requirements of this code and the provisions of Article 4 for special uses and occupancies.

Section 914.2 Horizontal exposure: Approved protectives shall be provided in every opening where the perpendicular fire separation is less than fifteen (15) feet.

Section 914.3 Vertical exposure: Approved protectives shall be provided in every opening which is less than fifty (50) feet vertically above the roof of an adjoining or adjacent structure that is within a horizontal distance of thirty (30) feet perpendicular to the wall in which the opening is located, unless such roof construction affords a fireresistance rating of not less than one and one-half (1-1/2) hours.

REVISED 10/5/88

PROJECT LIST

MASSACHUSETTS CODES, LAWS AND REGULATIONS

Code Number	Title	Effective Date
M.G.L. Chapter 143	Inspection and Regulation of, and Licenses for, Buildings, Elevators, Recreational Tramways and Cinematographs	12/31/85
M.G.L. Chapter 148	Fire Prevention	12/23/86
105 CMR 410.00	State Sanitary Code, Article II: Minimum Standards of Fitness for Human Habitation	9/1/83
105 CMR 590.00	State Sanitary Code, Article X Minimum Sanitary Standards for Food Service Establishments	9/16/88
248 CMR 2.00	Uniform State Plumbing Code, as amended	9/2/88
248 CMR 3.00-7.00	Massachusetts State Fuel Gas Code, as amended	6/24/88
301 CMR 11.00	Massachusetts Environmental Policy Act	1/9/87
310 CMR 22.22	Cross Connections Between Public Water Supplies and Fire and Industrial Water Supplies	9/4/87
360 CMR 10.00	Sewer Use Rules and Regulations	9/30/88
441 CMR 10.00	Prevention of Accidents in Construction Operations	1/1/78
441 CMR 16.00	Lighting Code for Factories, Workshops, Manufacturing and Mercantile Establishments	12/31/81
441 CMR 19.00	Window Cleaning	12/31/81
453 CMR 6.00	Removal, Containment or Encapsulation of Asbestos	10/30/87
454 CMR 10.00	Construction Industry Rules and Regulations	7/8/88
520 CMR	Department of Public Safety	
2.00	Use of Safety Glazing Materials in Hazardous Locations in Construction	1/1/78
6.00	Hoisting Machinery	1/1/78
521 CMR 2.00 - 3.00	Architectural Barriers Board	7/10/87
522 CMR 1.00 - 14.00	Board of Boiler Rules	6/30/84
522 CMR 15.00 - 16.00	Board of Boiler Rules	6/30/80
524 CMR 2.00 - 34.00	Board of Elevator Regulations, as amended	4/1/88
527 CMR 1.00 - 50.00	Board of Fire Prevention Regulations, as amended	6/10/88
527 CMR 12.00	Massachusetts Electrical Code-1987, as amended	6/10/88
530 CMR 2.00	Installation of Automatic Sprinklers in High-Rise Buildings	5/27/88
780 CMR 1.00 - 22.00	State Building Code, 4th Ed., 1980, as amended	7/1/88

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